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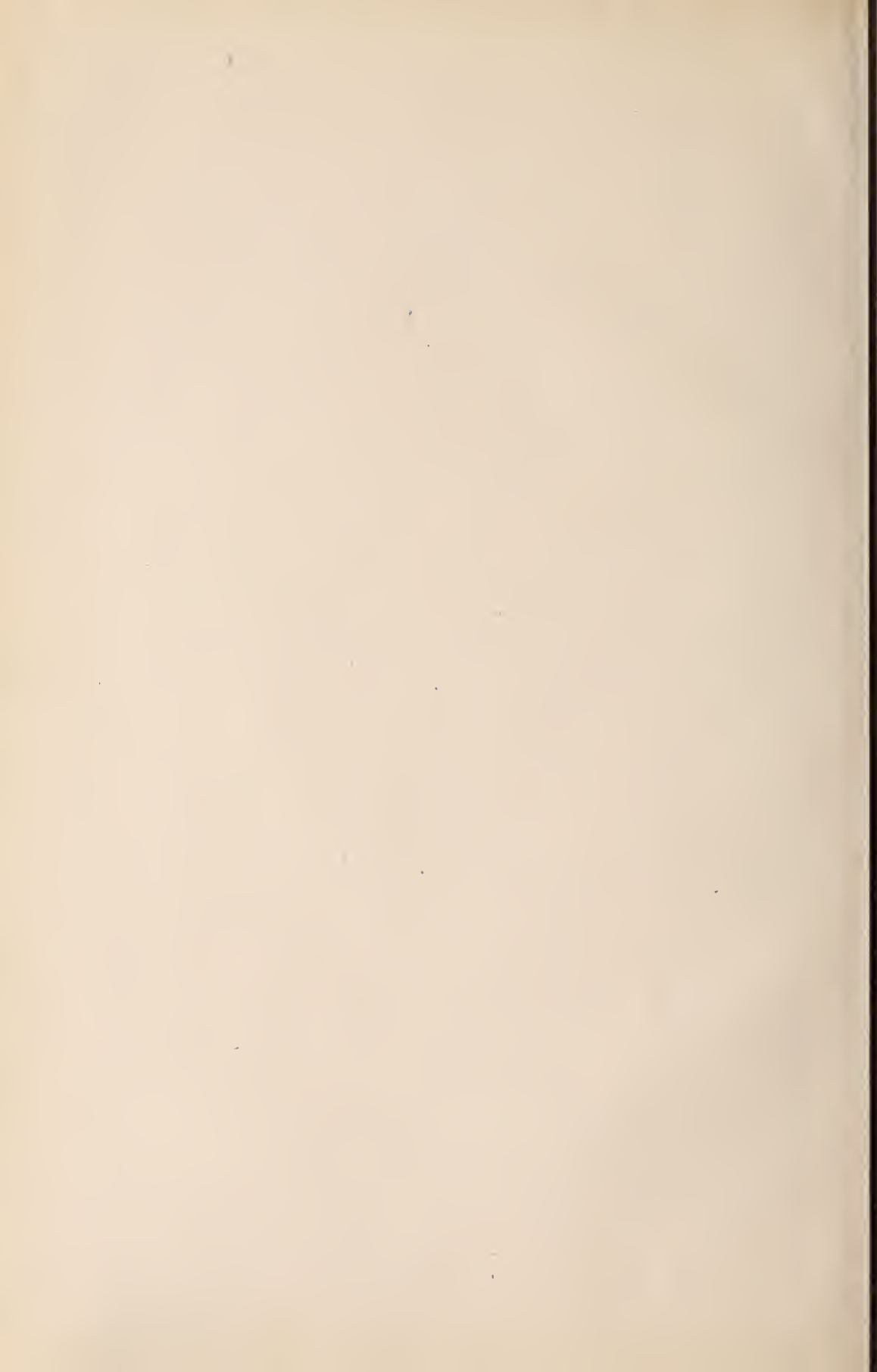
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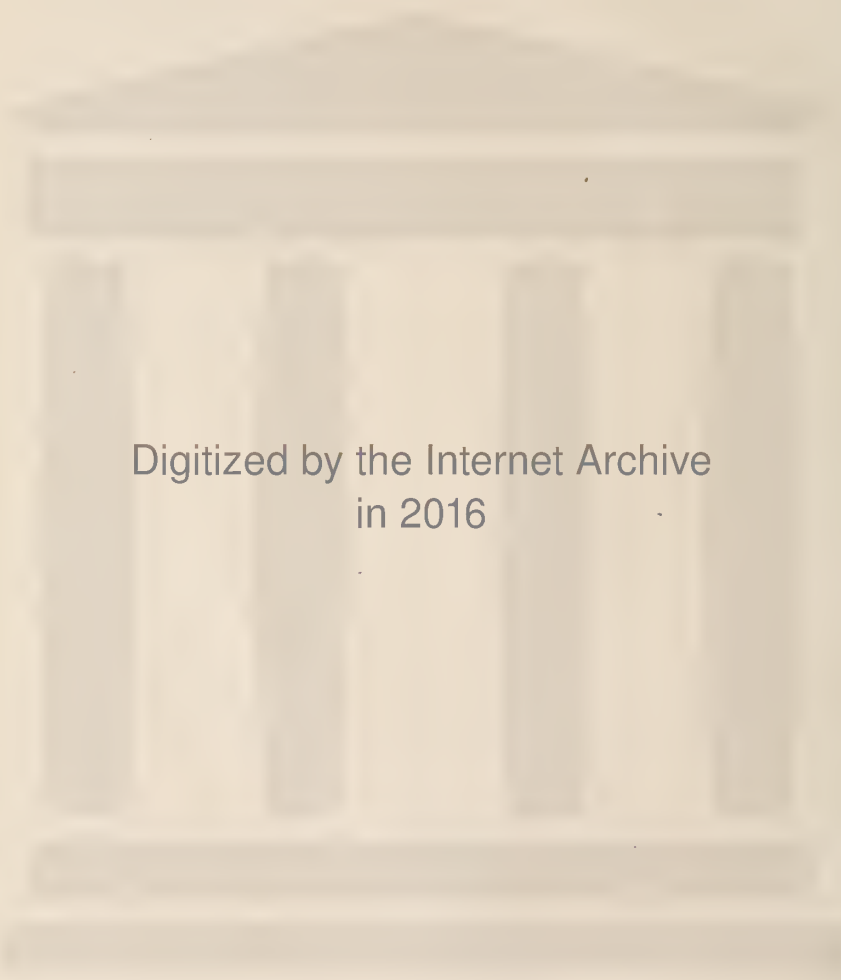
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# Colorado Medicine

The Journal of the Colorado State  
Medical Society

CHARLES S. ELDER, M. D., Editor

VOLUME X.

January to December, 1913

PUBLICATION COMMITTEE

Edward Jackson, M. D.

Geo. A. Moleen, M. D.

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# Colorado Medicine

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NO. 1

## Editorial Comment

### AS OTHERS SEE US.

The work done at the Mayo clinic has had greater influence upon western surgery than that of any other clinic in the world. We form our judgments as to the need and the results of surgery very largely from the reports from this bountiful source of experience. We imitate the operative methods in use at Rochester and try to reproduce the results obtained there. Any criticism of the work done by the Mayos must apply, therefore, although in less measure, to all western surgery.

Recently at a meeting of the Berlin Society for Internal Medicine, Bier and Ewald read papers on duodenal ulcer. In the discussion that followed, Hans Kehr, of gallstone fame, paid his respects to American surgery in general and to the Mayos in particular.

Whatever may be the justice of the opinion of American surgery expressed by Kehr, it seems to have fallen upon appreciative ears. Beginning as an informal discussion of a paper, his remarks were extended to form an article for the *Muenchner Medicinische Wochenschrift*.

Americans who visit the hospitals of continental Europe return with a favorable opinion of at least two aspects of

American hospitals. They are clean and many of them possess architectural dignity. Kehr received this impression:

"I have been in America and have learned to know the land and its people, physicians and patients. I have admired the palatial hospitals and sumptuously equipped operating rooms, and were I to give my impression of American surgery, especially abdominal surgery, I would describe it in six words, 'it is thoroughly boiled in water (es wird ueberall mit Wasser gekocht)'."

This critic of American surgery thinks that we subject our patients to the knife unnecessarily and too soon. Our people are, in his opinion, thoroughly docile and yield with little resistance to surgical persuasion.

"When a physician over there pronounces the word 'appendicitis,' he lets loose a reflex that brings the patient at once to the surgeon. You may be sure that two hours later this appendix is in alcohol."

He thinks that this willingness of our people to submit to operation and our adherence to the practice of early operation in abdominal disease is the only way to account for the fact that any surgeon should do more operations than he does.

"Mayo is an absolute adherent of early operation in appendicitis. To this I have no objection, but he is also an adherent of early operation in cholelithiasis and duodenal ulcer, and to this I am absolutely opposed on the ground of experience. At least not for all gallstones, the dangers of which both in the expectant and in the surgical treatment I well know. What modest people we Germans are in this respect! Is it such a fine piece of work to operate every case of duodenal ulcer or gallstones?"

How modest, indeed, is this particular



German surgeon! If anyone should doubt Kehr's modesty let him take note of this sly reference to Kehr's opinion of Kehr:

"In the diagnosis of abdominal diseases the Americans are in no way superior to us. They are a genuine republican people, free and progressive, while we Germans are conservative and careful. As regards technic, you must judge for yourselves. Lessing says, 'of his diligence every man may boast,' but when the individual surgeon boasts of his technic, it would justly be regarded as a gross lack of modesty."

If science is concerned with general principles and in this respect is opposed to trifling gossip which deals with personalities, the next statement can hardly be regarded as a scientific contribution to the subject of gallstone disease:

"Where would we be if we grabbed the knife in every case of duodenal ulcer and gallstones? If I took Moynihan's and Mayo's point of view the annual number of my laparotomies would rise from 160 to three and four times that number, and I would then carry out as many gallstone operations as Mayo in Rochester."

Kehr reminds his readers that he had the honor of addressing the Second International Surgical Congress on the subject of gallstones. On that occasion he prefaced his remarks with this quotation from Goethe: "There is no patriotism in art and no patriotism in science. Like all good things they both belong to the whole world and can advance only through the free intercourse of all people, with full recognition of that which has been left us by our predecessors."

With this great text in mind Kehr continues:

"We have reason to be satisfied with our achievements. All the operative methods that have been introduced by the Germans in gallstone surgery have held their place, but those of the English, French and Americans have not endured."

Without further comment, we reproduce such thoughts of this ferocious Teuton as might prove interesting or curious to an American reader:

"Just listen how great Mayo's material is: Before me lies the annual report of his hospital for 1907. In that year he performed 3,215 laparotomies. Not counting Sundays, he would average ten laparotomies a day. There were forty-two exploratory incisions in 190 opera-

tions on the stomach, equivalent to 22%. What will the specialists on the diseases of the stomach and intestines say to this? Such a thing is impossible with us. This is permissible only in the free land of America.

"Four hundred thirty-three patients were operated upon for acute suppurative appendicitis, of whom only five died; of the 702 operated upon in the interval not a single one died—lucky Mayo who never has emboli nor pneumonias!

"In the domain of operations upon the liver and bile ducts, I am only an orphan boy as compared with Mayo. It is remarkable that in 144 operations upon the liver, there were only 4½% of malignant complications. The number of my malignant complications is 18 to 20%.

"The mind-staggering low mortality of only 2.1% after laparotomies (here are included carcinomata, pancreatic necroses, diffuse cholangitis and septic peritonitis), is so wonderful that one may well doubt its accuracy, and what is worse, one begins to despair of his own skill and ability.

"If we in Berlin had only a mortality of 1.3% in abdominal diseases, it would be advisable to pass a motion to disband this society for internal medicine, or at least discontinue any more papers on diseases of the abdomen. With a mortality of 1.3% after surgical treatment, the internist may as well close shop.

"Mayo's material is so large that all the clinics and hospitals of Berlin, with its two and a half million inhabitants, would have to strain a lot to equal the little town of Rochester, with its population of 6,843. Rochester has become the Mecca in which all the belly-aches of the western part of America are concentrated."

It may be admitted that these trifling remarks, which seem to have been prompted by jealousy, are not proper material for editorial comment. They would not have been made the subject of review had it not happened that they furnish the occasion to introduce the substance of a paper by Trendelenburg of Leipsic, written in reply to the remarks of Kehr. Trendelenburg's rejoinder is so free from national feeling, so judicious in statement, and so pleasant to an American reader that it should not be passed in silence.

He thinks that Kehr's remarks must have been read with regret by every German surgeon. They were not within the limits of just criticism nor of scientific discussion. Trendelenburg could not expect nor wish that those who had been the

subjects of Kehr's critical remarks would reply to them. It was the duty of some German surgeon to do this. He felt this duty to be the more urgent because Kehr had drawn national differences into a discussion of purely scientific questions.

We learn that the work of the Mayos has been repeatedly described in the travel notes of German surgeons who tour our country. Trendelenburg adds to these reports some observations gathered upon the occasion of a visit of his own to the clinic at Rochester in May, 1906.

He is not convinced that Americans accept surgery more readily than other people. The patronage of the Mayo clinic is large, not because the patrons are "easy," but because the men at the head of that clinic enjoy the unwavering confidence of both physician and patient throughout the length and breadth of our country. The confidence of the public grows with the improvement in the results of their work and the better the consequences of surgery the more insistent the indication for it.

There were two reasons obvious to Trendelenburg for the beneficent outcome of the work done at Rochester. One was purely local; few cases of acute disease could reach men working in such an isolated place. The other and more important one is that the patients that gather at Rochester are carefully winnowed by a most complete examination and the unfavorable cases were not admitted to the hospital. To these he would add another factor of success that was not to be overlooked. The patients that go to Rochester were from the sturdy agricultural people of Minnesota or from the well nourished classes from the more distant parts of the United States. He found them to furnish a striking contrast to the half-starved applicants for admission to the public hospitals of the large cities of Germany.

Kehr spoke of the "early" as opposed to the "timely" operation, or the "oper-

ating when one will," as against "operating when it is necessary to do so." He thus impugns the motives of any one who would differ from him. To this, Trendelenburg replied that every surgeon does what he considers the timely operation, although there might be difference of opinion as to when the right time for operation had come.

With the growing benefits derived from abdominal surgery and the increasing certainty of its results there is greater need, in doubtful cases, for the exploratory incision against which Kehr inveighs. By this means, one may convince himself by direct inspection whether the patient may be helped by further surgery. There is only one objection that could be offered to this plan. The greater ease and certainty of a diagnosis made by incision might lead to the neglect of other diagnostic measures which it is designed to supplement, not to supplant. But Trendelenburg assures us that no one could justly accuse the mayos of neglecting a single diagnostic means of demonstrated worth or of promise. He is convinced from what he saw and from their writings that their patients are examined thoroughly and completely.

The Germans have a homely phrase—"to speak freely from the liver." It corresponds somewhat to our biblical expression, "from the abundance of the heart the mouth speaketh." Kehr boastingly remarked: "I speak freely from the liver, the organ that has brought me so much success!" To this Trendelenburg replies: "To speak freely from the liver is, at times, a commendable custom but it may depend upon what lies within the liver. There are some things that it would be well to suppress and allow them to be absorbed in silence."\*

\*"Frie von der Leber zu reden" ist gewiss eine schoene Sache, aber etwas kommt es doch auch darauf an, was man darauf sitzen hat. Manchmal ist es besser, einiges davon zurueckzubehalten und der stillen Resorption zu ueberlassen."

Trendelenburg gives a list of the writings of the Mayos and their assistants. He advises those that are critically inclined to read these works rather than depend upon the figures in the annual report of St. Mary's hospital. He gives an account of the clinic as it is and of its plans for the future which, he thinks, the Mayo genius for organization will bring to certain fruition.

### THE HYPOCHONDRIAC

No interest does she take  
In mountain, plain or lake,  
But on microbes can she fluently converse.  
The workings of her spleen;  
Her temperature mean;  
And the history of her case will she rehearse.

Such pains are in her head,  
She wishes she were dead;  
Oh, tell it not in Gotham—so do I!  
She is surfeited with nerves;  
Her stomach only serves  
To rouse hostile demonstrations from the pie.

Her liver's on a strike,  
Neuralgia and the like  
Hover threateningly o'er her like a pall,  
Her pulse is so erratic,  
Her breathing so asthmatic,  
That daily on the doctor must she call.

Her tastes are very notional,  
Her temperament emotional,  
True sympathy she ne'er expects to find.  
She has doctors by the score,  
But shows them all the door,  
When they tell her that the trouble's with her mind!

She says one must be daft  
To allow the deadly draught  
To meander through the sleeping room at night.  
She lives on asafoetida,  
Valerian, bromidia  
And hibernates in rooms that are air tight.

The blood flies to her head;  
"Quite naturally," we said,  
"Since a vacuum by nature is abhorred."  
She finds children "so distracting,"  
Grown people, "too exacting,"  
From such as she deliver us, good Lord!  
LEILA PEABODY.

Any member desirous of preparing a paper for the Glenwood Springs meeting of the Society, October 7, 8 and 9, should communicate at once with Dr. W. T. H. Baker, Pueblo, chairman of the committee on scientific work.

## Original Articles

### CONSTIPATION—MEDICAL STAND-POINT\*

By JOSEPH E. PEAIRS, M.D.,  
PUEBLO.

Constipation is more prevalent than poverty; it is more universal than taxes; its baleful effects infinitely more insidious and far-reaching than bubonic plague, or smallpox, or alcohol. It associates with the babe in arms, with the rosy girl at school, with the petted matron in society, with the athlete at Athens, with the laborer in the field, with the emperor on his throne, with senility at the grave.

The study of constipation, to be comprehensive, must survey the field from simple delay in normal evacuation of feces a year only, or to the laborer who had but who had evacuations from three to six times a year only, or the laborer who had but two actions a year.

The universality of the ailment, the obscure etiology, the nonchalance of the people regarding it—its pathological possibilities—all have appalled the physicians and brought them into a state of careless indifference regarding it. Even the old woman endeavoring to sweep back the sea with a broom ceased because of the resistless return of the tide.

Yet constipation is a condition, not a theory. How are we meeting it? The tons of cathartics and laxatives sold, testify. A physician would be deeply censured for giving morphine constantly for toothache or drugs daily for the evacuation of the bladder, but he is not condemned for prescribing medicine for the daily evacuation of the bowel.

He would be quickly condemned for failure to diagnose an alarming obstruction of

\*Read at the annual meeting of the Colorado State Medical Society, September 24, 1912.



the bowel, leading to a quick and certain death, but escapes censure for failure to recognize and cure a chronic atonic condition of the bowel leading more slowly, but as certainly, to the same end.

But what is constipation? Gant says, "Constipation is a disturbance in the normal discharge of the feces." Illoway says, "Constipation means that, although a sufficient quantity of food is taken and digested fully, there is nevertheless a want of normal discharge of the indigestible residual matters and the other matters therein gathered up from the bowel." Hertz says, "Constipation is a condition in which none of the residue of a meal, taken eight hours after defecation, is excreted within forty hours." The diagnosis being made by feeding charcoal and observation of the feces.

The causes are often obscure and complex, but I believe are comprehensively and tersely stated by Illoway under four heads:

1. Pathological conditions, within or without the intestinal tract.
2. Abnormalities of form, congenital or acquired, or dislocations of sections of the large bowel.
3. Foreign bodies in some portion of the bowel.
4. Defective performance of normal physiological function.

Authorities vary greatly regarding classification of constipation, but for the purposes of this discussion, I shall use the simple one of acute and chronic.

Illoway defines these as follows: "Acute constipation is that form which coming on suddenly, is but one of a group of symptoms, of a special, well defined and acute pathological process; where in the treatment of the case, our attention is not especially directed to the relief of the constipation, even though we may resort to laxative medication, where with cure of the pathological process the constipation disappears."

After intussusception, volvulus, inversion, strangulation, obstruction, inflammation of the bowel, peritonitis, meningitis, acute mania, apoplexy, acutely diseased spinal cord, acute infectious diseases, hysteria, diseased liver or inflamed muscles are treated and disappear, the constipation also disappears.

Chronic constipation embraces all that form which is of slow and gradual development and which does not present any acute morbid phenomena.

"A. It is produced by well-defined morbid processes.

"B. By obstruction from foreign bodies.

"C. By congenital malformation of a section of the large bowel, or by defective development of the intestinal tract, or by a dislocation of any part thereof.

"D. By impairment of physiological functioning alone."

—Illoway.

This paper has to deal only with the first and last of these divisions—morbid processes and impairment of physiological functioning, except indeed as to differential diagnosis.

Habitual constipation is usually caused by perverted or imperfect physiological function. The former being designated as spastic and the latter as atonic constipation. By far the greater number of cases are due to atony, more especially of the large bowel. Spastic form is usually a secondary matter and like an acute constipation, yields under proper treatment of the pathological condition inducing it.

The etiology of habitual constipation is so varied that it is only possible to give a general outline of them in passing. A slightly modified classification given by Gant appears to me to be comprehensive.

Heredity, sex, age, want of physical exercise, occupation and environment, upright position, chronic invalidism, impairment of abdominal muscles, atony of intes-

tines, diatetic factors, neglect of nature's calls, reading at stool, inconveniently located and badly constructed water closets, too frequent child bearing, drug and enema habits, chemical and medicinal causes, colitis, sigmoiditis, proctitis, psychic influences, obstructive causes.

The physician must be a diagnostician before he is therapist. His methods in diagnosing constipation must be as thorough as in any other disease—utilizing every means at his command for differential diagnosis.

History, inspection, palpation macroscopic and microscopic, chemical examination, percussion, inflation, distension, digital and instrumental examination, and if indicated, exploratory incision, must all be brought into use to avoid diagnostic blunders and to effect a cure. There are grave dangers in treating the symptoms of constipation without ascertaining the cause. There may be mechanical obstruction, amenable to surgical treatment only; there may be an overloaded pelvic colon, which will be aggravated by diet, massage, purgatives or routine treatment.

Hertz classification of the causes of constipation is often an aid to diagnosis and treatment.

1. Those which delay the passage of food between the stomach and pelvic colon.

2. Those which produce a partial or complete failure of defecation which he calls dyschezia.

Both classes are further divided into two groups of causes, according as they lead to a deficiency of muscular force or to an increase of the resistance to be overcome. Simple constipation is in the majority of cases readily distinguished from pelvic colon stasis, by history, habits, symptoms and rectal and abdominal examination. Usually, if more than a very small quantity of feces is found in the rectum at any period except immediately before defecation, dyschezia may be diagnosed. The diagnosis may

always be made by a bismuth meal and the use of X-rays.

Hertz spent three years in the study of the alimentary canal and emphasizes the importance of this differential diagnosis, because, generally speaking, the treatment is very different. The stimulating treatment necessary to impel a lazy, atonic intestine to peristalsis sufficient to pass the residue of food to the pelvic colon, would in most cases of pelvic colon stasis, or dyschezia, serve only to cause greater distension and distress in the pelvic colon.

Diagnostic criteria for absolute and finer differentiation are meagre, and until we know more of the physio-chemical processes of the body we must be content with the grosser diagnosis and the prevention of the graver consequences of constipation.

We know that in the living protoplasm of the cell exists the cause of the decomposition going on in the organism. That food decomposition is produced by the chemical activity of cells in the tissues, but who can tell scientifically of its transportation; its selection; its assimilation by distant cells; its elimination; where physiological process ends and pathological begins? In his *Physiologie-Chemie*, Hoppe-Seyler said, "The process of life of the organism is, in the main, a complete mystery." Weintraud, in *Modern Clinical Medicine*, declares that we are as yet far from a solution.

We believe that faulty metabolism leaves waste products, which if they accumulate through lack of proper elimination, poison the system, inciting further catabolism, thus forming a vicious circle and eventually disease. It would appear that the tubercular is an example of this character.

The possible relationship of pathological conditions, induced by chronic constipation to known diseases with obscure etiology is a topic of great and abiding interest at this period. How much do we really know of the cause of neurasthenic conditions, chronic arthritis, chorea, chlorosis,

hysteria, epilepsy, obesity or diabetes? What a vast field for research is opened for clinicians!

Lane believes that degenerative processes produced by absorption of toxic material in the intestinal tract brings about mechanical conditions, such as adhesions, kinks, flexions, volvulus, etc., causing chronic constipation.

Binnie attributes to constipation many distant lesions, such as arthritis, reinfection in tuberculosis, and that it has a very definite bearing upon many other obscure conditions.

The recent researches of Prof. Folin of Harvard indicate that the liver does not wholly protect the body from the vicious products of digestion, which findings, if confirmed, greatly emphasize the theory of auto intoxication.

It matters little whether Bouchard's story of auto intoxication be wholly true; no one can deny the possibility of the detrimental effects of the retention of fecal matter, even though there be no immediate appreciable effects; nor can he deny that the individual is not more susceptible to disease, nor that his resistance is not greatly lowered when he is combating disease. Morbid instances of prolonged intestinal stasis only indicate toleration developed by individuals. As the inhabitants of Styria have established a tolerance to an amount of arsenic which would kill several hundred normal men, so there is established in individuals a tolerance to ptomaines and leucomains, nevertheless the general rule holds true that through constipation man absorbs poisons which decrease vitality and invite disease.

But after recognition of the pathologic influence of constipation and after differential diagnosis—what?

Treatment by any method that will get results. Comprehensively, this includes prevention by education, diet, hydro-therapy, massage (manual and mechanical),

electricity, suggestion and drugs. In the brief time allotted I can discuss only a few of the methods which perhaps have not been reiterated so often as to make them tiresome. Binnie's general suggestions for treatment include: Support of the abdomen with a well-fitting binder or lifting corset; strengthening the abdominal muscles by exercises; regulating of the diet, avoiding foods which leave a large residue to be absorbed by the large intestine; regulation of the bowel movement by rectal flushing, with the use of oils and petroleum products (white vaseline) by the mouth and the judicious use of massage.

The dietetic regimen of sugars, fats, vegetable acids and cellulose is often impossible with irritable stomachs, but the experience of Schmidt, Dudley Roberts, Gompertz and others would appear to indicate great possibilities from the use of agar-agar in chronic constipation. Acting upon the theory that the contents of the bowel must develop the physical and chemical action to bring about the required peristalsis to induce evacuation, Prof. Mendel of Yale suggested the use of agar-agar, a simple carbohydrate taken from sea weed.

Its property of absorbing water, of resisting the enzymes and bacterial decomposition makes it valuable in both spastic and atonic forms of constipation, where the stool is dry and scybalous, as it adds bulk to the feces, keeps them moist and aids a normal peristalsis. It may be taken alone with sugar, cream or upon breakfast foods in the ground form. From two to four teaspoonsful is sufficient dose.

Cohendy has stated that no less than two-thirds of the weight of human feces consists of bacteria resulting from food putrefaction and cell destruction. Metchnikoff's experiments demonstrated that the large intestine shelters bacteria, when in a condition of stasis as in chronic constipation, which are responsible for what Robert Barnes called coproemia. He demonstrated



that milk soured by the Massol or Bulgarian bacillus, is a great producer of lactic acid, which is not only an antiseptic and germicide, but Schmidt has demonstrated that it is a laxative and promotes peristalsis.

Luke suggests the addition of agar-agar if constipation fails to yield through the use of sour milk.

In the integration of the body chaos is superseded by chemical correlation and equilibrium brought about through the blood and nervous system, by the action of chemical messengers which Starling designates as hormones. Many of these hormones come from the ductless glands and a product of the spleen taken at the height of digestion is supposed to stimulate intestinal peristalsis.

This therapeutic agent may be procured in the form of Hormonal (Zueler) and in appropriate doses twenty to forty cc, injected into muscles or intravenously, is said to produce promptly energetic persistalsis, beginning at the pylorus and continuing throughout the large intestine.

Hormonal is presumed to be indicated in chronic atonic constipation, in intestinal atony and in post-operative intestinal parietic conditions. Hormonal has been condemned as causing sudden fall of blood pressure, loss of coaguability of blood and in inducing only an insignificant increase in peristalsis of the intestines.

However, the greater number of experimenters believe it a valuable organo-therapeutic agent, which in appropriate cases does produce prompt and lasting peristalsis; rarely produces untoward local effects and is indicated in the most chronic and severe types of constipation (except in some forms of spastic) and in all post-operative parietic conditions. They emphasize the necessity of simultaneous use of other therapeutic measures to maintain peristalsis.

Digestion is not wholly a chemical pro-

cess. Pawlow's investigations at the Imperial Institute at St. Petersburg not only indicates that appetite and mental factors help or hinder digestion, but that they may very materially modify chemical processes. This belief was well voiced by Dr. Austin Flint a quarter of a century ago, but its full interpretation has not yet been made.

Appetite depends largely upon mental conditions. Max Müller's story of how language might have developed from imitation of natural sounds, illustrates how an unfavorable state of mind disturbs digestion. A traveler in interior China, entirely ignorant of the language of the country, was given a meat stew which was so appetizing that he asked for more. Desiring to learn what he was eating and believing it to be duck, pointed to the meat and said, "Quack!" "Quack!" The waiter said quickly, "Ugh! Bow wow!" and lo! the appetite was gone and instead nausea and disgust.

To us in the Western world the suggestion of asses milk, horse flesh, rats, snail soup, angleworm stew, brings on a feeling of aversion, but in the other civilized communities of the world these are all appetizing portions of diet.

Sour milk was once considered scarcely fit for swine, but since its inhibitive action upon the pathological flora of the intestines and its laxative function is known, it is not only widely utilized as a food but is deemed a pleasant beverage.

The most indifferent observer knows the effect of pleasant environment and good cheer on digestion, but people have far less fear of habit forming with a "grouch" than with medicine. Yet anger, worry, grief, mental stress, all have a profound effect upon the process of digestion and evacuation. Pawlow's experiments showed that a cat given food it liked with bismuth would have a rapid and normal peristalsis, but when the cat was teased until even slightly angry the peristalsis would cease and a

period elapse before its return to normal.

Someone has told me of a man whose bowels moved each new moon because he could not forget his mother's habit of giving him a laxative at that time. Every trainer of athletes knows that anxiety and suspense preceding a contest will often bring on violent attacks of diarrhea. I once had charge of a football eleven, and just before an important game against a much more experienced team, nine of my men had acute diarrhea and three of them declared that they could not play, but after the first contact in the struggle it was all forgotten and they won the game.

To test their bravery for a special mission, six soldiers were drawn up before a platoon to be shot. Although blank cartridges were used, all but one soldier fell, and when he was told that he was to have a mission for his bravery he said he would be ready to go after he changed his clothing, for although he had retained control of his muscles of station, he had lost control of his bowels.

These instances illustrate the influence of mind and deep emotion over intestines, and it follows logically that lesser emotions do interfere with normal functions. That over attention to the bowels may bring about constipation by causing increased inhibition of peristalsis, just as a severe emotional disturbance may paralyze inhibition and bring about increased peristalsis with consequent diarrhea.

The auto suggestion of fixing an exact time to go to stool may be made as effective in evacuation of the bowels as the habit of awakening at an hour fixed in the mind before retiring. The beginning and end of the act of defecation is voluntary and the mind must be wholly given to the purpose. Reading at stool is a bad habit. Lincoln tells of a small steamboat which had so little steam power that it had to stop when it whistled. The case is analogous.

While I am assured that digestion, assim-

ilation and elimination are not wholly a chemical process but that mental factors have much to do with each step, yet I have no patience with therapeutic nihilism. It is born and bred in the pratings of suggestion societies. Drugless healers are responsible for innumerable physical cripples.

I have endeavored to emphasize the following facts:

1. That constipation is prevalent.
2. That we have not yet discovered its etiology or its true relation to disease.
3. That the general public considers it of little moment.
4. That physicians, appalled by the magnitude of the task, are apathetic.
5. That painstaking diagnosis is imperative.
6. That it is largely preventable by education, diet and the use of mental factors.
7. That the process of digestion, assimilation and elimination are not wholly chemical, but co-incidentally mental.
8. That drugs are a necessary efficacious part of the therapeutics of constipation.

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### *SURGICAL TREATMENT OF CONSTIPATION\**

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By CHARLES B. LYMAN, M.D.,  
DENVER.

Constipation, like cough and rise in temperature, is but an index of the existence of some pathological lesion which might bring about such a condition, and each case must be worked out to the end if we are to be of much assistance to our patient. Those who have preceded me have given you in detail the medical care of these cases, as well as the rectal and anal side of it, and it remains for me to consider the causes which can be successfully handled by the surgeon.

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\*Read at the Annual Meeting of the Colorado State Medical Society, Aug. 15, 16, 17, 1911.

The act of defecation is initiated by the descent of fecal material from the pelvic colon into the rectum. Normally, the faeces are retained in the descending colon, owing to the fact that the pelvic colon joins the rectum at an angle. The presence of fecal material in the rectum initiates the act of defecation, and X-ray observations show that the descending colon, under normal conditions empties itself at a single act of defecation, and that it requires from three to four hours for the contents of the colon to travel from the cecum to the anus, and about three and one-half to four and one-half hours for the ingested material to appear at the ileo-cecal junction, at which point it is discharged into the cecum in a semi-fluid state.

The surgical side of the treatment of constipation is a large one, and each year adds to our list of causes. I would divide the surgical cause of chronic constipation into two classes:

First, those which produce obstruction to the onward passage of the contents of the colon, and

Second, those which produce alterations in the character of the contents of the gut, thus retarding its onward passage. The first class includes the larger percentage of the conditions requiring the surgeon's care. To this class belong,

First, congenital malformations of the colon, such as megalo-colon, or Hirschsprung's disease. Diminution in the size of the colon through faulty development, long sigmoid and diverticula of the colon.

Second, malposition of the colon, either congenital or acquired.

Third, obstructions resulting from malignant or non-malignant stricture. Tumors connected with the gut or pressing upon it. Adhesion resulting from an adhesive peritonitis, either post-operative or otherwise. The so-called Jackson's and Lane's membranes, either congenital or resulting from a peri-colitis.

To the second class belong the abnormal conditions existing in one or more of the various intra-abdominal organs which in one way or another may prevent proper peristalsis, or may alter the character of the contents of the gut, such as pyloric ulcer, diseases of the biliary system, appendicitis and diverticulitis. In the various conditions mentioned in the latter class, constipation is only a secondary proposition and as such its relief will be incident to proper surgical treatment of the existing conditions. The conditions mentioned in the first class are the ones which I especially wish to speak of, as chronic constipation in these patients may be the symptom of prominence. Lane has well expressed it when he says, "The large gut is the cesspool of the human body." And we might add that chronic constipation is purely a matter of faulty plumbing. In the study of the mechanics of chronic constipation we owe much to our X-ray men, who by their improved methods, are able, not only to demonstrate to us the malpositions and faults in development of the gut, but are at the same time able to tell us how rapidly the contents of the gut are passed along. But one should use good judgment in the interpretation of these X-ray findings, and not be too eager to submit every woman to an operation whose intestines do not carry along their contents as rapidly as we think they should. Again we find by observation of many X-ray plates taken for other conditions, that the position and size of various portions of the large gut varies greatly and much malposition may exist without symptoms definitely referable to such conditions. Much has been written on this subject during the last few years which has been gathered together and admirably summarized by Bevan in his paper read before the Surgical Section at the last session of the A. M. A.

In some parts of this country there has been of late much done in the way of opera-



tion. The enthusiasm of some surgeons when possessed of some fixed idea, is very great and their interpretation of the end results under this enthusiasm is very much as a man's must be who looks at the sun through a smoked glass, and the published results must be carefully analyzed before being accepted. By this I do not intend to be understood as opposing surgical measures for the cure of chronic constipation, there are many cases which require it. Dilatation of the colon, either congenital or acquired, may be of sufficient moment to demand operation for relief. Infolding of the gut by plication was formally done, but from my observation it is not satisfactory or permanent in its results. If the symptoms present are sufficiently severe to warrant an operation, the one which gives the best results is an anastomosis which will exclude the dilated portion. The method of anastomosis to be used will vary according to the conditions found in each case. Even this is not always permanent in its results; the distal portions of the gut may become dilated and give rise to volvulus.

Diminution in the size of the colon is not as common a condition as the one just mentioned, but one that is productive of chronic constipation when it does exist. In one case of this kind which I have seen, the small colon was accompanied by a coloptosis. This latter condition was corrected with partial relief to the extreme constipation. Recent X-ray examinations show that the colon has never increased in size, and I believe that removal of the constricted portion of the gut will be necessary to a complete cure.

Coloptosis, with or without accompanying gastropptosis, is one of the most common conditions producing chronic constipation. There have been several theories advanced to explain these conditions, congenital degeneration of the tissues, etc., but it would seem that a more simple explanation could be found, in as much as most of these cases

are found in women, in the wearing of corsets and the changes incident to child-bearing, the former producing downward pressure upon the organs in question, thus stretching the suspensory ligaments, and the latter producing a relaxed condition of the abdominal walls, which takes away the support from below, thus allowing them to drop; but whatever the cause may be, the fact remains that many women are sufferers from this condition. Rovsing divides these cases into two groups, the virginal and the maternal, the former occurring in young women, and due to the changes incident to the pressure of tight-fitting corsets upon the lower thoracic wall. It is not for me to enter into a discussion of this class of cases here, except in so far as they are sufferers from chronic constipation. The maternal variety is due to the laxity of the abdominal walls following pregnancy and child birth. In this class constipation is the predominant symptom and the other symptoms are not as marked as in the other variety. What shall we do with these women? Today the question is not whether the treatment shall be medical or surgical, but what surgical treatment shall we use? In all these cases the colon and stomach must be raised to their normal positions and retained there. The methods in use are practically two, first those which aim to suspend the organs by shortening the lesser omentum and suspensory ligaments, and second those which aim to support them by stitching the stomach, greater omentum, or colon to the anterior abdominal wall. The methods comprised in the first group are not satisfactory, as these tissues are in most cases very thin, and even when of fair thickness, will stretch, with a resulting recurrence of symptoms. Suturing of the greater omentum to the anterior abdominal wall is in the hands of its advocate, Coffey, very satisfactory, but it seems to me that it is open to very much this same objection. I have never felt that it was a

method as certain in its results as direct colonopexy and gastropexy, which methods I have used in a large number of cases. There is a physiological objection to these procedures, namely, that the normal mobility of these organs may be interfered with, but practically I have seen no symptoms resulting which would substantiate this. In doing colonopexy one should see that the colon is attached well out to the hepatic and splenic flexures, and in gastropexy, one should leave the pyloric area free.

Much attention has been given of late to a condition frequently found along the caecum and ascending colon in which these portions of the large gut are bound down to the lateral abdominal wall by a definite membrane freely movable over the gut, but holding it tightly and rotating it on its axis, and in many cases obstructing it in some portion. This condition was first brought to the attention of the profession as an entity by Jackson, and has been labeled Jackson's membrane. Lane, Gerster and others have given to us their ideas as to its pathology. Gerster's idea that it is the result of a colitis and pericolitis seems to be the most rational. Here again constipation is but one of the many symptoms to be found, and it is not for me under the title of this symposium to go into it any further than to say that it is often productive of extreme constipation, and observation made upon the cadaver has shown that it may offer sufficient obstruction to the flow of water under pressure to suggest the possibility of complete obstipation as a possible result. The positive diagnoses of its existence prior to operation is not always possible, though I have seen a number of cases where a probable diagnosis has been made. The condition is one which should always be looked for when the abdomen is open and examination can be easily made. The remedy is easy; the colon is easily freed by division of the membrane,

and one will be surprised to find how great has been its action in producing constriction and immobility of the gut. In most of these cases the area left denuded of endothelium will be so great that nothing can be done toward covering it in, and one must trust to nature to accomplish it without the recurrence of the membrane. The relief to constipation following the division of these membranes is very satisfactory. The so-called Lane's membrane as found in the ileum is exactly the same in character and it would seem logical to believe that it is due to the same cause, and that it is not a congenital condition. The remedy here is the same, and the ileum should always be carefully examined in all appendectomies, as many mistakes in diagnosis have been made, and many patients have still complained of appendicitis and constipation after the appendix has been removed. The methods I have outlined would seem to be a more conservative method of treatment of these various conditions.

Lane and his followers who believe that these conditions of dilated colon, misplaced colon and constrictions from artificial membrane are the result of faulty development advocate the free use of more radical measures and think that most cases require resections of the gut or an anastomosis, which will exclude that portion of the gut which is abnormal, even going so far as to remove entirely the large gut from the ileum to the sigmoid, claiming good results following. Such procedures and methods have been severely criticised by many of our best American surgeons. It is no doubt true that there are some cases which will require radical measures of this character, but experience of most of the American surgeons is opposed to the indiscriminate use of these radical measures. Post-operative and idiopathic peritoneal adhesions are often a causative factor in the production of chronic constipation. Their existence can only be suspected in most cases. A pos-



itive diagnosis is rarely made without inspection, and their removal is usually an easy matter.

Obstructions from malignant and non-malignant tumors hardly comes within the scope of this paper, as in these cases constipation is only a symptom of secondary importance.

### DISCUSSION.

**Dr. F. P. Gengenbach, Denver:** I was in hopes that perhaps some mention might be made of constipation in infants. One must not forget that this whole trouble may start right at the beginning of life. There are young babes, babes on the breast, babes a few weeks old or a few months old, constipated. In those cases one can very often relieve the constipation by some alteration or modification in the food, but one cannot always do that. We have had advanced two explanations of constipation. One is the mental suggestion, the other is the mechanical defect or mechanical involvement. In infants, in all probability, either one of these explanations is very plausible. We hear of hypertrophied valves, but here we have a young infant, and, unless he is born with hypertrophied valves they cannot have any influence in that case.

We talk of mental suggestion. Mental suggestion does have some effect, I will admit. For instance, we know that we can take a very young infant, a few months old, perhaps if we would start, even a few weeks old, we would be surprised what we could do towards establishing the habit of free evacuation of the bowels. We know, for instance, if we take an infant and every morning after its first bottle we take a small vessel, hold it in our lap, holding the infant over it, and as a suggestion we use a soap-stick or suppository, and the bowels will move, especially if they are liquid enough, soft enough so that we do not have constipation from hard feces, which the infant cannot expel. Then we know if we continue to do that every morning, after a while as soon as we put the baby on the vessel just the position alone suggests to the baby that its bowels should move, and it will make the effort. But we cannot do this in every case. So there must be some explanation which we have not yet found for constipation.

**Dr. H. B. Whitney, Denver:** Dr. Edson's remarks remind me of a little trick I once learned from some source I have forgotten—an aid to defecation when an individual is suffering from constipation because of inability to thrust out or push out the mass as it has collected in the lower rectum. The forefinger, or first two fingers, of the left hand are used for the purpose of exerting external pressure, through the space between the anus and the lower end of the coccyx, upon the fecal mass. This may, of course, be done without soiling the finger at all. The hard, often spherical

and more or less immovable fecal mass is thus molded and kneaded into a form which will easily engage in the anal orifice, and so render easy what would otherwise be accomplished only with much straining and difficulty. As I know from personal experience, this is an invaluable aid in the form of constipation above alluded to, and should never be forgotten in our instructions to our patients.

**Dr. Will H. Swan, Colorado Springs:** I think that the speakers who have called attention to or emphasized the fact that no one thing causes constipation in all cases, but that many factors are important, have stated the situation very wisely. I wish, however, to emphasize particularly the mental or psychological part of the thing, and the matter of habit. I have found a great many people, obstinately constipated for years, who have been entirely relieved by simply establishing a definite habit of going to stool at some convenient time (whenever that may be, preferably after breakfast), taking plenty of time and not getting excited or anxious or under high tension mentally until after the evacuation has occurred. I have found people repeatedly who get on perfectly well at home and as long as things are going in their ordinary way, but if they get up to take an early train or have something unusual happen in the morning, they have no evacuation at the usual time and it is all off for the rest of the day. I believe this point is of immense importance, one of the most important causes of constipation in the rank and file of people.

### CONSTIPATION—PEAIRS.

#### Discussion Closed.

**Dr. J. E. Peairs, Pueblo, Colorado:** I anticipated that ninety per cent of the discussion upon this symposium would be upon the surgical phase, yet probably ninety per cent of all physicians secure ninety per cent of their income out of the practice of internal medicine. Nevertheless probably ninety per cent of these same physicians are better posted upon surgical procedure than they are upon internal medicine.

The gentlemen discussing the surgical aspect of this subject emphasizes the fact that Lane believes constipation to be due, largely, to pathological conditions, indicating surgical interference. However, he did not emphasize the fact that Lane believes that these pathological conditions are brought about by toxins absorbed in the intestinal canal as a result of constipation. Although the leader of the discussion seemed to scoff somewhat because suggestion was advocated strongly in the paper, as an aid to diet, habits, and medicine, I still insist that it is one of the most potent factors in the treatment of constipation.

I believe that the incidents quoted in the paper may be multiplied every day with every case, until the proof is insurmountable. What is habit but suggestion? Is not diet a habit? The simple act of going to stool is a suggestion. Regular medicine long since preempted

the field of suggestive medicine, but failing to utilize it to its fullest possibilities, the quacks are now occupying largely this field.

I thoroughly believe in the use of drugs, and in modern scientific surgical interference in the treatment of constipation, but I as emphatically believe that preventive medicine in its broad sense, utilizing suggestion, habit, and diet will eliminate the necessity of the use of drugs and surgery to a very large extent.

## *EYE STRAIN IN THE TUBERCULOUS\**

By OTIS ORENDORFF, M.D.,  
CANON CITY.

While the importance of eye strain in the tuberculous has already been recognized and it is not intended today to present initiatory doctrines, it seems opportune to consider this factor along with others, some of greater and some of less weight, in the present antitubercular movement in the state and our Society.

Upon first thought, one would consider the subject pretty well threshed out, but when reviewing the literature of recent years (and scientific refraction is yet in its youth) I find that the subject is usually discussed from a reverse standpoint, i. e., at the St. Louis Medical Meeting of the A. M. A. in 1910 there was a splendid report of the Committee for the Study of the Relation of Tuberculosis to the Diseases of the Eye and incidentally in the list of diseases was not included asthenopia, either accommodative or muscular. <sup>1</sup>

F. Park Lewis says that we have no statistics on the frequency of eye strain in the tubercular. "In none of the institutions established by public or private beneficence for the investigation or treatment of tuberculosis, in none of the reports that have been issued by individuals or associations, and by none of the authorities so far as it has been possible to learn has an exact examination with record of the condition of the refraction and the dynamics of the eye

muscles been considered as an essential part of the anamnesis." <sup>2</sup>

Dr. Jackson in his paper before the Weld County Medical Society last May, says, "Pulmonary tuberculosis, even when comparatively slight and going on to complete recovery will inflict headaches that are only mitigated or escaped by the wearing of glasses." <sup>3</sup>

So abundant is literature at command giving authority for the statement that functional derangement and disease of the nervous and other systems and organs of the body may be directly or indirectly caused by eye strain that it seems superfluous to furnish citations, yet its relation to the most common and deadly disease is seldom mentioned. <sup>3</sup>

It is also well known that the nervous system, which is below par, will render the individual more susceptible to disease and that tuberculosis is frequently preceeded by some nervous manifestation in some of its protean forms, and further that the nervous element in the treatment of tuberculosis is one of the most difficult to contend with.

It is the intent of this paper to briefly consider the importance of nervous conditions in this disease and to discuss the relation of asthenopia directly to nerve exhaustion and indirectly to tuberculosis. Unfortunately some writers, especially American, have been too enthusiastic about the far-reaching effects of eye strain, which has given rise to well-deserved skepticism. Still no informed physician today doubts that headache, insomnia, brain fag, vertigo, dyspepsia and even dysmenorrhoea may have their origin or be detrimentally influenced by eye strain.

While it is well understood that there is only one direct cause of tuberculosis, yet do we sufficiently consider that there must always be an indirect cause also? That it is always Koch's bacillus that causes consumption, which is a constitutional disease,

\*Read at the annual meeting of the Colorado State Medical Society, September 24, 1912.

and that also there must be some other element besides infection? And when the disease is once developed do we always warn the patient that not only one thing or two, but that every possible available measure, no matter how insignificant, must be considered in order to obtain a cure?

By the impartial study of this question we must conclude that an uncorrected eye strain or badly balanced muscles will be factors in the cause and cure of tuberculosis.

You will remember that as a rule a patient beginning treatment for tuberculosis requires constant supervision, in that he will forget or neglect his instruction in the requisite of a cure, for he may be thoroughly drilled in theory and practice regarding pure air, sleep, food, exercise, habits, thoughts, excesses and addictions, but unless he is closely watched, he will backslide. He is also prone to treat the most carefully prescribed and adjusted pair of lenses in the same way, because, perhaps, they did not clear his vision or that they become easily soiled. An added misfortune is that he feels called upon to use his eyes excessively for close work. I frequently am compelled to scold some pitiful individual who has been sentenced to months of rest, sometimes in bed, yet who expects to use his eyes for reading and other close work almost constantly during the waking hours for the reason that he is denied any other means of employing his time.

We have learned that it is not necessary to have pain and discomfort in the eye to be a sufferer from eye strain, for the symptoms may be entirely outside of the eye itself, and that these are the cases that are liable to be overlooked by the practitioner as well as the patient.

Again to one in a feeble condition of health a very small error of refraction, so small that it is not even suspected, may play havoc, while a greater error in a per-

son otherwise in robust health may cause no trouble whatever and really have not prejudicial effect. On this account a plea is made for the most painstaking care in refracting the tuberculous and those inclined to tuberculosis. Personally, as a rule, I do not use cyclopegia in refractions, but I find it of advantage in the neurotic and the tuberculous. Here it is necessary to be most exact and with a paralyzed ciliary muscle the ordeal is not so long and trying to first the patient and incidentally the physician. <sup>4</sup>

Any continued strain, mental or physical, will exhaust the nervous system of an individual, hence there is a lowered vitality and ensuing malnutrition, affecting all of the vital organs. In addition to the increased vulnerability that can in this way be occasioned by eye strain, there is a more direct path in the connection that exists by way of the routes of the various cerebral nerves and the irritation and exhaustion of the nerve center will inhibit the function of all nerves having their origin at this center. In this manner the action of the pneumogastric nerve may be hindered, thus affecting the ears, pharynx, larynx, esophagus, heart, lungs, stomach, liver, spleen, intestines and the sympathetic nervous system with all of which the pneumogastric is so intimately connected.

Because of the erratic course of tuberculosis and of so many factors contributing to its arrest, improvement and recovery, it is very difficult to sift out instructive detailed case reports discussing refraction and gymnastics of the ocular muscles upon it.

Lewis describes two typical cases, one of a teacher, aged 33, who suffered from gastric and intestinal indigestion, due to hyperopic astigmatism with anisometropia, and was cured by wearing the proper correction. He also furnishes another record of a young woman who had compound hyperopic astigmatic anisometropia, causing impairment of digestion and metabolism



and preventing recovery in pulmonary tuberculosis. With a full correction nausea and indigestion disappeared, assimilation became normal, weight increased and she was fully recovered in every way. She cannot go without her glasses without a return of her old symptoms.

In my own list of cases can be included one of a bookkeeper who lingered along at about half working capacity after having everything else done in the way of relief and who has been working full time since a slight astigmatism was corrected and a weak adduction brought up to standard. Also a middle aged professional man who attributes a complete cure to the full correction of a compound hyperopic astigmatism after having exhausted every other resource and losing ground whenever he resumed his work.

After having trodden these paths for several years I feel that I am justified in concluding with an unbiased mind that at least some benefit was derived in a few cases and much in a few more and that my modest efforts have been rewarded, even if the weapons consisted of but humble little pieces of glass.

To those members to whom this short paper is of no instructive value, I trust that it has at least proven of some little interest.

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<sup>1</sup>Trans. Sec. on Ophthal., A. M. A., 1910, p. 124.

<sup>2</sup>Trans. Sec. on Ophthal., A. M. A., 1908, p. 59.

<sup>3</sup>Gould. Eye Strain and Civilization. Also Ranney. Eye Strain in Health and Disease.

<sup>4</sup>Hinchelwood. Lancet. Feb. 18, 1911.

<sup>5</sup>Colo. Med., Aug., 1912, p. 237.

The obligation assumed on entering the profession requires the physician to comport himself as a gentleman and demands that he use every honorable means to uphold the dignity and honor of his vocation, to exalt its standards and to extend its sphere of usefulness. A physician should not base his practice on an exclusive dogma or sectarian system, for "sects are implacable despots; to accept their thralldom is to take away all liberty from one's actions and thought." (Nicon, father of Galen.)—Principles of Ethics of the A. M. A.

## FURTHER OBSERVATIONS OF URETERAL OBSTRUCTION OR BEGINNING OF INTERMITTENT HYDRONEPHROSIS.\*

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One year ago I presented to this body a new method of radiographic procedure. The same subject matter and plates were presented to the American Urological Association last April, and published in their proceedings. This consists of obtaining an X-ray of the injectel kidney and ureter in both the prone and erect positions, which latter part, so far as I have been able to learn, was never used previous to my suggestion. The method deals with the kidney and ureter under normal fluid conditions, that is, they are filled with a col-largol solution, the catheter has been removed from the upper ureter and thus both kidney and upper ureter are free to move in any direction that gravity may influence without being limited by a more or less stiff catheter as they are being dislodged, while the patient is erect, from their normal position as is usually assumed in the recumbent position; therefore, the circumstances of the examination in the upright position are exactly the same as when their attacks are brought on in their daily life. This, it seems to me, is the most reasonable method of examination possible, for we are always desirous of exactly reproducing the circumstances of the difficulty during the examination of any lesion. I have now had sufficient experience with the method to prove its extreme accuracy and also to prove the inaccuracy of all previously used methods, when applied to these early stages of intermittent hydronephrosis, that is, while the kidney pelvis is being dilated from normal, ten to fifteen cubic centimeters, to

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large dilatations where there can be no doubt about that dilatation when the capacity of the tumor is accurately obtained, for it is only in these large dilatations that the capacity method is of real value, and even here it cannot demonstrate the location of the obstruction nor how it occurs; I have also been able to prove that the method of reproducing their old pain or in giving them a new pain upon injecting the kidney pelvis, cannot be relied upon, for it is impossible for them to accurately interpret the character or location of the pain, and cannot differentiate between this pain and several others of the region, e. g., the pain of gall stones, of chronic appendicitis, or a pinching upon the ilio-inguinal or ilio-hypogastric nerves from osseomyelitis or subluxation of the vertebrae; the best they can do is to locate the general region of the pain. I have found that there is 25 per cent. of error in this method, while in the capacity method or content all the early cases must be discarded and therefore the kidney must go on expanding until greatly dilated, while my method applies equally well to all cases whether it is just beginning or whether there is an immense dilation. Some men have taken issue with me in that they claim there is no hydronephrosis present in my cases; this is true, if by hydronephrosis is meant a large sac, containing considerable quantity of watery urine, but I maintain that a hydronephrosis is present as soon as there is a retardation of the urine from the kidney pelvis, and this may be simply a retardation or a temporary or permanent partial or complete obstruction, and too, that the patient suffers pain according to the amount of obstruction and not according to the amount of dilatation, and too, that the pain is greater during the early process of dilation than in the large tumor often found. This is also true in large dilatations of the urinary bladder. These cases of early intermittent hydronephrosis in a measure simulate

stone of the kidney or ureter, but lack the more positive symptoms, such as blood and pus in the urine, are then sent for an X-ray and when that is negative it is then thought to be appendicitis, gall stones, cholecystitis, stomach trouble, or "ovarian trouble" in about that order of frequency. It is agreed among the prominent radiographers of the country that only about 80 per cent. of all cases sent to them with a clinical diagnosis of kidney stone show any shadow of a stone on the plate; therefore, what are they? The vast majority of them are early intermittent hydronephrosis, a few of them gall stones, a few are atrophic appendices, a few of them spinal pressure lesions as the nerve roots pass out the spinal foramina, a few are gall stones in the gall bladder, practically none of them have anything to do with the ovaries, although the pain being referred there is often misleading, but it is wholly unreasonable to think of the ovaries giving such pain when they are normal.

The attack is usually brought on by some unusual strain, as heavy work, rough, jolting riding on horseback, vehicle or car, occasionally by sneezing, coughing or a long breath after a full dinner, the stomach forcing the kidney downward, or any movement that will tend to produce this result. Therefore in examining these, I first take a picture when the patient is lying down and the ureteral catheter is up to the kidney, then gently inject the collargol solution filling the kidney pelvis and perhaps the ureter around the catheter, then I withdraw the cystoscope and have them stand erect before the plate and have them go through appropriate movements to dislodge the kidney or force it downward; at the same time I withdraw the catheter from the upper ureter while gently injecting more of the collargol solution. We always take stercoscopic plates in this position, as this overcomes mistakes of foreshortening of a single plate. We now com-

pare the several plates, looking for stones, how far the kidney has dropped, and the amount of rotation in any of its three axes, and the relative position of the upper ureter, whether it has been free to move and follow the kidney in its excursion, or whether it has a fixed point within the radius of the kidney's excursion.

The etiology of beginning intermittent hydronephrosis is based upon a normal or abnormal excursion of the kidney in conjunction with a fixed point of the ureter within the radius of this excursion, which fixed point may be due an aberrant blood vessel, an adhesion of the ureter or a band of adhesions crossing the ureter in front of or behind it, over or under which the ureter loops and gives varying degrees of obstruction to the free outflow of the urine. This is my own explanation of the difference between loose or floating kidneys not giving any symptoms and one that is, and I want to urge its importance, and too, the importance of its demonstration, for I certainly believe that unless it is demonstrated that it is not good surgery to operate upon a floating kidney with less evidence than its presence proven radiographically. The presence of a loose kidney or the attempt to find the amount of excursion, is, I am convinced, from the standpoint of fact or value in aiding a diagnosis, wholly without value, for if it were then you should advise operation upon all loose and floating kidneys simply because they are loose and floating and not because some of them are giving trouble which you have definitely fixed upon the kidney and proven it radiographically; otherwise, your examination (so-called) can be only done for its mental effect upon the patient; for the degree of mobility has absolutely nothing to do with production of symptoms, you may profoundly announce that you have discovered a floating kidney, a fact that most patients are already aware of, and possibly you will dilate upon the great dan-

gers that may arise from it; on the other hand, it may be you will tell them that it is of no importance at all; that many people have them and that they never give any trouble, unless some thoughtless doctor has told her of it and now she has her mind centered upon and it appears so large that she has become a neurotic and is very hysterical. How convenient are these well sounding terms that mean no more than the previously muchly used term "idiopathic disease," and we think they sound so well that any patient ought to be satisfied with such an impressive verdict.

*Symptomatology.* The attacks of early intermittent hydronephrosis are those entirely of obstruction and a considerable amount of tenderness of the kidney for several days following. The urinary findings are normal, except there may be a decrease temporarily during the severest part of the attack, but this may be followed by an increased flow afterwards; however, these are not constant enough to be of much value. In some few cases there is an increased frequency of urination during the attack. There is no blood in the urine and I do not believe it can occur without some condition other than the obstruction being present. There is no tumor except the kidney itself may be felt and has often been found by the patient during these attacks. The cystoscope shows the bladder as normal unless some complication has arisen. The kidney pelvis may be entirely normal as to content. There is no rise in temperature unless pyonephrosis or pyelitis be present. Functional tests will show no change in renal efficiency. You will be unable to demonstrate retention in the kidney, with the ureteral catheter, as the kidney will be properly drained when the patient is lying down. However, retention can usually be shown when the patient is standing upright. The amount of pain varies according to the degree of obstruction and not according to the degree of perma-



nent dilatation, for, I am convinced, that patients, as a rule, suffer more in the early stages of dilatation than later when there may even be a very large sac, e. g. in the so-called painless intermittent hydronephrosis. This is certainly also true in distension of the urinary bladder as evidenced in acute and chronic retention. I have previously offered the following explanation in the "Painless Intermittent Hydronephrosis" cases, that these are of congenital origin and that the patient did suffer pain in the early stages, when he was a child, and the attacks were considered to be some form of intestinal difficulty or overlooked entirely, and now when there is a chronic dilatation they really do not suffer any pain during the temporary presence of the tumor.

As to the etiology of movable kidney, volumes have been written and no factor can be agreed upon as even the most important. Pregnancy has been proven to have no important bearing upon it, as Dr. Harris has collected the history of 105 cases of floating kidney, fifty-three of which had never been pregnant and fifty-two had borne one or more children. My work to date proves that fatness and leanness has no bearing, as I can show cases varying in weight from 100 pounds to 225 pounds, and in plump individuals as well as in the tall, thin ones. An increase in weight may simply make it impossible for you to find the organ. I believe that body configuration has much to do with it, and too that a filled caecum, as pointed out by Dr. Longyear, is very important, but I believe that we will have to conclude that the kidney is simply insufficiently supplied by supporting tissue, now that the human has assumed the upright position; but regardless of its etiology we must concern ourselves more upon the undisputed demonstration of its obstruction and the relief of the condition.

*Treatment.* It would seem that after a

lesion of ureteral blocking had been definitely demonstrated there is little argument over what should be advised. It is necessary to relieve the obstruction. To accomplish this a nephropexy should be done, and the aberrant vessel or band of adhesion or adhesion should be found and divided. I must lay much stress upon this last, for it is certain that a fair percentage of nephropexies fail to hold the kidney in its place permanently, and then the obstruction would recur if there were yet a fixed point in the upper ureter. Therefore I must lay much stress upon the definite diagnosis and location of the offending structure, and this I believe to be sufficient justification for the slight discomfort and expense of the procedure. It may also fix the blame upon the kidney where the patient's statement upon injection has been doubtful or negative, and too, by it you will prevent your operating upon the wrong kidney in cases of transposed pain. I, therefore, believe the method to be eminently consistent with modern methods of diagnosis and conservative surgery. The results of fourteen cases operated or followed by me have shown entire relief covering a period of two months to two years. The use of belts, corsets, adhesive straps or supporters of any sort are wholly inadequate and inefficient and can offer no hope of permanent relief and are worthless, uncomfortable and trifling.

I wish to again acknowledge obligations to Dr. Geo. Stover for the efficient services of himself and his assistant, Miss Mayes, and for valuable aid and suggestions in this work.

Mr. L. Referred by Dr. Miel, Denver. Had first attack eighteen months ago; pain in region of bladder and frequency of urination for two days, then passed a stony scale and considerable sand, some blood for several days; three days later had severe pain in right kidney region and ureter,

some more blood but no stone or sand; was quite well until seven days ago, when a plug of bloody mucous was passed; now has tenesmus, frequency and urgency, with some blood, no casts; albumen present, also pus and colon bacilli; denies venereal history. Examination showed a very badly trabeculated bladder; some of the trabeculae were certainly deep enough to form concretions and sediment; left ureteral urine was normal; right ureter could not be catheterized at that sitting, but after two months' treatment it was catheterized and urine was normal, also an immense change had occurred in the bladder; the trabeculae had nearly all disappeared and the patient has been relieved after the first ten days of treatment. Discussion: This is a very interesting case, as the question as to the origin of the stony scale can hardly be answered unless it formed in the trabeculae of the bladder, which appears very probable. This would also explain all of his symptoms except the pain in the right kidney and ureteral region, which came on three days after the scale was passed. I can

offer no explanation for this at the present time, as there was no obstruction demonstrable in the kidney or ureter, and the kidney promptly emptied itself when patient was upright.

Fig. 1. Mr. L., Patient upright; previous plates had shown the kidney in its normal position and normal in all appearances; kidney has dropped a little more than its normal excursion, nearly two inches here, but no obstruction is shown, the gentle curves of the ureter are not abnormal and demonstrate that the ureter has no fixed point in its course as mentioned above; this is abnormal excursion but with normal mobility of the ureter. Diagnosis: Kidney and ureter are both normal and are excluded. Please keep this plate in mind while examining these others, as this represents the normal.

Mrs. C. J., aged 25; housewife. Patient thin, but not emaciated. First attack of pain one year ago, when six months pregnant, in region of left kidney and down the ureter. Sixteen hours later same sort of pain in right kidney with pain down right ureter, and into the external genitals and inside right leg. Never another attack in region of left kidney. Was very tender in both kidney regions for several days. Had frequency of urination, with tenesmus. Pus in urine. Vomited during attack. Passed one stone following these attacks, size of small bean. Two other attacks on right side before confinement. Since then pain has been constant, with several attacks. Worst attack ever experienced two months ago. Had chill, vomiting, and high temperature. Never has seen blood in urine. Pain is relieved somewhat when lying down, but much worse when wearing a corset or when working. Cystoscopic examination: Bladder mucosa normal. Mouths of both ureters normal; no evidence of stone. Pain was reproduced upon both sides, and was very sure that it was her old pain. Some pus from each



FIG. I.



kidney. Renal capacity of each kidney, 12 c.c.



FIG. II.

Fig. 2. Mrs. C. J., mentioned above. Each kidney dropped about two inches and each showing a definite kink close to the pelvis. Diagnosis: Double intermittent pyonephrosis, without destruction of the kidney substance.

Mrs. W., referred by Dr. Robert King, Denver, Colo. Waitress, aged 29. Began four years ago with sudden pain in appendix region, which extended down right ureter and inside of right leg, to the knee. Some relief upon lying down. One year later appendix was removed and small ovarian cyst. No relief at all. Trouble was then pronounced to be due to adhesions and nervousness. Attacks have continued occasionally since, but more severe, and during the last six months patient has been practically an invalid, and is quite thin. Right kidney low down and very movable; left kidney not easily palpable. Urinary

findings negative. Catheter met an obstruction 23 cm. from mouth of right ureter, but was able to pass 5 cm. farther by manipulating the kidney up to its place. Left ureter 33 cm. Amount required to reproduce pain on right side 14 cc.; amount to produce a new pain upon left side, 10 cc.

Fig. 3. Mrs. W., mentioned above. Left kidney dropped about one and one-half inch, showing a fairly definite kink close to the pelvis. Right kidney dropped nearly an inch farther and rotated on its anterior-posterior axis, and a definite kink shown about one and one-half inch below kidney pelvis. Diagnosis: Right-sided intermittent hydronephrosis. Advised a double nephropexy, for I thought it desirable to replace the left kidney to prevent future trouble there. Operation: Double nephropexy, double ureter on right side in its upper course. The lower ureter was adhered to the upper ureter, thus kinking both of them at the point as shown by the radiograph. Uneventful recovery, with complete relief to date, seven months later:



FIG. III.

has now been working for four months, without the least difficulty.

Mrs. C. R. G. Referred by Dr. Robert King. Housewife, aged 25; one child three years old. Has had occasional attacks of pain in left iliac region since birth of child. Attacks so frequent in the last four months has had to give up her housework. Lost twenty-five pounds. Pain comes on suddenly while working; is relieved usually by lying down. Passes more urine after cessation of pain. Diagnosed and treated for supposed tumor of the ovary for past three months. Examination: Pelvis negative; right kidney very much prolapsed; left kidney not palpable. Cystoscopic examination: Bladder, negative; urine from both kidneys negative. Upon injecting left kidney a new pain was produced with 15 cc. Injecting the right kidney with 14 cc., the pain was reproduced in the left iliac region.



FIG. IV.

Fig. 4. Mrs. C. R. G., mentioned above. Left kidney shows normal excursion with

ureter in gentle curves. Right kidney entirely within the pelvis and rotated upon its anterior-posterior axis so that its outer border is looking directly downward. Diagnosis. Right-sided intermittent hydronephrosis, producing left-sided pain. Without pathological dilatation or impairment of function. Operation: An adhesion was found between ureter and genito-crural nerve at level of fourth lumbar vertebra. Nephropexy was done. Patient entirely relieved to date, seven months later. Discussion: This case is an extremely interesting one from the fact that the pain was transposed to the opposite side and that no lesion was demonstrable on the left side. The transposition of the pain might be explained by the adhesion to the genito-crural nerve. The bifurcation of the kidney pelvis is interesting for its comparative rarity. Had this case been operated without the positive proof of the radiographic evidences of the lesion, one would have been very much at a loss to know which side to operate. It is one of the rare cases where the transposition of the pain has been definitely proven.

Mrs. S. Has had severe pain in region of appendix, right ovary and right back for a number of years upon hard work, riding on street cars and railroad train or when running down stairs; was relieved partially by lying down; could not do her housework and was practically an invalid; has also very bad urethral caruncles; has been kept in bed months at a time without permanent relief; has three children, two of them now adults.

Fig. 5. Same patient, erect, kidney (right) markedly prolapsed, rotated upon its antero-posterior and vertical axes, most of the organ lies within the pelvis. The pictures in the recumbent posture showed the kidney in its normal position and normal in appearance. Diagnosis: Chronic intermittent hydro-nephrosis. Advised to be operated; will be soon.



FIG. V.

Miss H., aged 22. Referred by Dr. Farrington. Normal weight; in good flesh. Two years ago had pain beginning at crest of right ilium, extending downward into right pelvis. No connection with menstruation. Diagnosed as right tubal abscess and treated for same. Several attacks since. Comes on after hard work. Relieved by lying down on hot water bag. Polyuria after attack. Double abscesses in ischio-rectal fossæ still present as connecting sinuses. Right kidney palpable and extremely movable. Urinary findings negative. Cystoscopic examination; Right ureter pouting, left normal; bladder mucosa normal. On dilatation of right kidney pelvis patient said that the pain produced was not the same, but later thought it was, thus making the procedure of no diagnostic value. Radiographs taken. Renal capacity, 16 cc.

Fig. 6. Miss H., mentioned above, standing upright. Kidney entirely within pelvis. Rotated on anterior-posterior axis so that outer border is facing downward. The kink in the ureter opposite fourth lumbar vertebra. Diagnosis: Right-sided intermit-



FIG. VI.

tent hydronephrosis, without pathological changes.

Mrs. B. Referred by Dr. Black, Pueblo, Colo. Began four years ago with pain in right back, gall bladder, kidney and appendix region; came on intermittently, vomited; tenderness in region after attacks ceased; appendix was removed and gall bladder drained; said she was relieved for several months after this, then claims the pain recurred; gall bladder was again drained for several months and then allowed to close, but without relief; after about a year it was thought that there probably were stones in the hepatic ducts and sent to another city for examination and operation; the gall bladder was removed—no stones found; over mobile right kidney was found but dismissed as unimportant. This was six months ago and no relief followed; great pains now in right side upon exertion, riding in auto, on street cars or railroad train; declared upon injecting the right kidney that the pain was the same that she has suffered these four





FIG. VII.

years; for last several months has also had pain upon left side and interpreted this as her usual pain here when I injected this kidney.

Fig. 7. Mrs. B. Previous plates showed both kidneys in their normal positions and normal in appearance. Patient erect; right kidney dropped three and one-half inches, rotated upon vertical and antero-posterior axes; in the plate right ureter can be seen passing behind the pelvis and a distinct kink can be made out three-fourths of an inch above the pelvis as it shows on the plate. The left kidney drops nearly two inches, without rotation; a distinct angulation is shown close to the body of the third lumbar vertebrae. Please notice how straight the ureters are below the fixed point in each one, which also confirms my previous statement that they will contract and gently curve if they are free to move as the kidney drops. Advised double nephropexy. Do not know subsequent history.

Mr. V. Referred by Drs. Van Zant and

Stover, Denver, Colo. Patient has had recurring attacks of pain in region of right kidney which radiated down ureter and into right groin; has passed bloody urine during these attacks, which were followed with tenderness in the region. This persisted for some time; a previous X-ray showed a suspicious stone shadow in lower right ureteral region, and it was desired that this shadow should be oriented: upon my suggestion it was decided to also investigate the kidney at the same time, as our attention had been directed to this in previous cases of stone in the tract:

Fig. 8. Mr. V. Previous plates showed the kidney in normal position, but not quite normal in appearance; the calyces were not clear cut and definite in outline; kidney has dropped a distance of two entire vertebrae, rotated upon vertical axis mostly, pelvis slightly enlarged; a definite kink is seen two inches lower, which the plate shows beautifully by pinching out all of the collargol at this point. The stone, unfortunately does not show sufficiently in



FIG. VIII.

this print to demonstrate, but it was oriented as being in the ureter nine centimeters from the mouth of the ureter. Diagnosis: Stone in the ureter and intermittent hydronephrosis. Operated by Dr. Wetherill, both stone and obstruction found as indicated; obstruction due to band of adhesions crossing ureter. Successful result.

Mr. S. Referred by Drs. Prewitt and Arneill. Has suffered more or less pain since boyhood. As a boy could not run, jump, ride a horse or bicycle or play as other boys, without setting up a severe pain in the region of his left kidney, and would often have to lie down to get relief. Could not do heavy work for the same reason and complained so much that his family thought he was pretending and shirking his duties, and in late years he resented their treatment so much that he felt compelled to leave his home and people, which he did. Sixteen months ago, after exposure to severe weather, an intense pain came on suddenly in the region of the middle of the left ureter and radiated upwards and backwards into the kidney region; this lasted two days but was very sore for two weeks; had chills and vomiting with the attack as he has also had with two subsequent severe attacks; has a frequency of urination now all the time and a constant aching and tenderness in the middle of the left ureter; has lost weight; has had the following diagnoses made: Enlarged prostate by several doctors and urged to have it removed; the prostate was not enlarged nor was it contracted, nor does frequency of urination in a man of prostatic age necessarily mean an enlarged prostate. Cystitis was another diagnosis; there was certainly a cystitis, but the cause for cystitis must be discovered; had been cystoscoped but for some reason was not successful on the left side; right urine was said to be normal and guinea pigs had been negative; I found no difficulty to catheterize the ureters. I corroborated the findings of the right side,

but there was much pus and alkaline urine from the left, while the right urine and bladder urine were both acid; ureteral obstruction from stone or kinking were considered likely and used as a working basis; no stone was found either before or after collargol injection, but we were able to demonstrate beyond a doubt that we were dealing with a pyo-hydronephrosis, and I interpret this that he had suffered with a hydronephrosis since childhood and of late years has had an infection planted on top of this.



FIG. IX.

Fig. 9. Mr. S. Previous plates had excluded stone in the tract, and subsequent plates proved retention of the collargol in the kidney for more than five minutes, while a normal ureter and kidney will empty themselves in less than half a minute with the patient in the upright position; patient standing, kidney has dropped about three and one-half inches, and rotated 90 degrees on its antero-posterior axis; catheter in lower ureter and pelvis

injected partially: a separate calyx or rather now an abscess cavity can be made out in two different places, above and below the main part of the pelvis. A stereoscopic partner plate showed these things most beautifully. Diagnosis: Intermittent pyohydronephrosis; no tuberculosis could be determined at time of operation, four weeks after operation, and after five treatments of pelvic lavage the urine from the left kidney was perfectly normal and acid; two months afterwards the kidney region was entirely free from difficulty, but there was yet some difficulty with the bladder, as we might well expect.

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My conclusions at the present time are:

(1) That early intermittent hydronephrosis is mistaken for stone in the ureter or kidney in fully 70 per cent. of all cases, and for appendicitis in about 35 per cent. of all cases on the right side.

(2) That the so-called classical symptoms of intermittent hydronephrosis can apply only to the late and advanced cases and are absolutely without value in all early manifestations.

(3) That the etiology is based upon the normal or an abnormal excursion of kidney, and must have a fixed point within the radius of that excursion to produce obstruction.

(4) That all previous methods of examination as final procedures are wholly inadequate and untrustworthy and are to be used only as an indication for radiographic investigation.

(5) That it is impossible to properly interpret or locate the pain from distending the kidney pelvis, except to know that it is in the same general region.

(6) That if the cystoscope and X-ray are properly used, a more accurate diagnosis may be made upon the urinary tract than upon the soft tissues of any other part of the body, and too, that it can be made so plain that the layman may understand

it as well as the physician, in fact, as a rule it is as accurate as radiography of the bony skeleton.

(7) That there is some danger with the method, as a collargol infarct may be produced by exerting too much pressure while injecting the solution, but this is entirely unnecessary if you have determined the pelvic capacity at a previous sitting, and if in the hands of an experienced man.

(8) That if the method is properly used you will be able to diagnose positively all cases of ureteral obstruction sufficiently early to save every kidney in its normal physiological function.

(9) That the method devised by the author is accurate, scientific and harmless in every respect, is extremely practical and is open to no reasonable criticism, its findings are beyond dispute: it demonstrates the lesion and removes the possibility of a mistake between this lesion and any other in the belly, and in the light of the present perfection of the cystoscope and the skill of the radiologists and cystoscopists, no surgeon is justified in operating upon the kidney, ureter or bladder, unless a positive diagnosis has been made radiographically, nor in advising operation upon any abdominal difficulty wherein the kidney may be involved without having first excluded it positively.

(10) That exploratory procedures upon the kidney, such as laying it wide open in search of stone, abscess or for other diagnostic purposes, are non-surgical and are to be severely condemned, and can only result in mutilation of the organ and destruction of its parenchyma or in secondary hemorrhage, requiring nephrectomy in from 50 to 70 per cent. of cases. Exposing both kidneys in search of tuberculosis is proper, provided it has been impossible for a competent cystoscopist to obtain a satisfactory examination of the urinary tract, on account of extensive ulceration, irritation or contraction of the bladder: fortu-



ately, this necessity is comparatively rare.

(11) That the position of the genito-urinary surgeon has been fortified, even made imperative by the progress of urinary tract diagnosis and treatment by the development of the examining, operative and treatment cystoscopes along with renal radiography, and he is deserving of recognition by the general surgeon as a necessary specialist, and not a usurper, in the general field of surgery, and should be placed upon the staff of every hospital as such; but at the same time the urological surgeon should present operative ability in this field that excels that of the general surgeon as does his ability for correctly diagnosing in this region.

#### DISCUSSION OPENED.

**Dr. Oliver Lyons, Denver:** The recent advance in technic in kidney and ureteral surgery to the present almost perfect science has made the cystoscope a necessity in the diagnosis of the kidney, ureteral and bladder lesions as well as in the deferential diagnosis of many abdominal conditions. Lesions of the urinary tract can be made out with as much or more certainty than any other organ of the body. The cystoscope and ureteral catheter are indispensable by those who are familiar with their use. Unless one is carried away by enthusiasm he is willing to concede an occasional limitation, but despite these few limitations the cystoscope has been the crowning glory of urology.

If the development of the ureter be considered it will be found that in foetal life the lumen of the ureter is narrowed considerably at its junction with the pelvis, about one inch below, at the brim of the pelvis and at the entrance of the bladder. In foetal life it is in a smooth wall tube of the same caliber, but presents numerous valvular infoldings of mucous and muscular coats which tend to disappear after birth, but if they persist, they form congenital strictures, or valves, kinks or twists, and may give rise to a hydronephrosis. These malformations are common and cause no symptoms, and are more important to the anatomist than to the surgeon, but they may interfere with that which has been achieved by the beautiful radiograms shown here this afternoon.

No abdominal arteries are more irregular in their distribution than are those which supply the kidneys. They vary in number, origin and mode of entrance into the kidney. They may rise from the common iliac or any of its branches, the mesentery, super-renal or hepatic. They may enter the kidney at the hilum or any point upon the renal surface. The same may be said of the veins. Many of these aberrant

arteries may be distributed in such a way as to cause a hydronephrosis, but they are often combined with other congenital abnormalities such as valves or strictures, and become merely aggravating causes. The ligation of these arteries has the disadvantage of cutting off the blood supply of the kidney and does not always relieve. The fact that stands out most prominently from these illustrations is that the ureter does not follow the same, or approximately the same, course in every case.

Having noticed this variability in my own skiograms made for diagnostic purposes, I injected a few patients who were not suffering course of the ureter, and it is astonishing to note the serpentine course this little tube will take, even under apparently normal conditions. The course appears to be different when the patient is in a prone or semi-prone position. Differences are also apparent when the tube is placed at a different angle, even if the patient remains in the same position. These cases were not pathological, yet there was a very apparent deviation in the upper part of the ureter, and in one case a floating kidney, which caused no symptoms, show a very marked kink in the ureter. Of course, the kink in this case was considered of no practical significance, because there was no mechanical obstruction, with the consequent dilation of its ureter and pelvis above, which must be present and proven before these cases are treated surgically.

However, when nephropoysis is accompanied by unmistakable evidence of obstruction it requires nephropexy for relief, but when used to cure the nervous phenomena so common in this class of neurotics it should be condemned. I believe this condition is more apparent than real, as a considerable mobility of the upper part of the ureter must necessarily exist and has only come to our knowledge by the use of the cystoscope and X-ray, and like all other new discoveries we sometimes let our enthusiasm warp our better judgment.

**Dr. William M. Spitzer, Denver:** In the first place, I should like to say that this is very fine work, and I wish to compliment both the cystoscopist and the roentgenologist on the work exhibited. It demonstrates, too, I think, that these cases should have thorough diagnostic work done on them before being operated. This work of necessity requires both a competent cystoscopist and a competent roentgenologist, and slipshod work has no place here.

From this point on I must differ from the essayist. He claims originality for this work; he claims that kinks of the ureter are pathologic, and he claims that there are no other ways of demonstrating the lesions he has shown you; and further claims are made that this method of injection of collargol possesses no danger.

The German, Lichtenberg, the original inventor of the injection of collargol into kidney pelvis and ureter, for radiographic purposes, gave it up three years ago, after five or six years' use, because he met several severe renal hemorrhages after its injection, because it clouded the presence of a stone or stones, and for several other reasons that he mentions in

an article on this subject in one of the recent numbers of "Muenchener Medicinische Wochenschrift," and now uses oxygen gas where he formerly used collargol.

As to kinks in the ureter the right ureter (and you will notice that all kinds that have been shown in this series of pictures are in the right ureter) is normally kinked. This is because the right ureter is as long as the left, while the right kidney lies lower, and because the right ureter has but two fixed points, the pelvis of the kidney and the wall of the bladder, while the left ureter has three fixed points, the pelvis of the kidney, the exact central point of the base of the meso-sigmoideum, and the wall of the bladder. The left ureter is, as a rule, straight.

As to other ways of demonstrating ureteral kinks: Kretschmer and Schmidt have shown that when a ureteral catheter is placed in the ureter of a cadaver, the catheter does not change the course of the ureter. Therefore a shadowgraph catheter will demonstrate a ureteral kink. In further proof of this I can show at my office at any time pictures of shadowgraph catheters in situ with kinks. One of these pictures actually shows a ureter completely kinked to make a perfect circle.

Lastly, nobody cares whether a ureter is kinked or not, because this kinking has no significance, and I cannot agree with the author that if a kink is demonstrated that there should be an operation for hydronephrosis, even if there is no hydronephrosis present.

#### DISCUSSION CLOSED.

**Dr. O. S. Fowler, Denver:** Dr. Lyons states that we must first prove that a dilatation of the renal pelvis is present before operation should be advised. I called attention to this in my paper and must still disagree with him, as you must understand and admit that this process of dilatation must begin with the normal and advance very slowly unless the obstruction is complete, and I must insist that pain is present at all stages. It simply means whether you want to make a diagnosis and effect a cure early or late in the gradual course of destruction of the kidney. It is not intended that this procedure was devised or used for neurotics or other nervous phenomena, but if such an individual should have ureteral obstruction I know of no reason why he should not have it corrected, and it is quite possible that his other conditions might be benefited. A mere deviation in the upper ureter is not sufficient to place a case in the class of ureteral obstruction and I also said that I would not advise operation unless there were symptoms of obstruction, even if there were an apparent kink; however, if a stereoscopic picture is taken, it will show that these apparent kinks, if only one plate is taken, are only deviations in the course of the normal ureter.

Dr. Spitzer spoke of the dangers of this method. I spoke of these in my paper. The only injuries I have seen have occurred in the hands of two different men in their first cases, and they had not been worked out previous to the injection of the collargol. As to kinks be-

ing common in the normal ureter, I must disagree on that point. A more or less gentle curve will not give obstruction, but an angulation of the ureter will give it, and I believe that it is impossible for it not to cause at least much stasis of the urine. As to the use of a stilet catheter or catheter alone, I am very positive that its results are worthless when the patient is upright; it will show that the kidney may drop, but it is stiff enough that it will prevent the upper ureter from assuming its usual position when filled with solution, e. g., urine or collargol.

I have examined this work with stilet catheters with Drs. Schmidt and Kretschmer, personally, and they have done more of it than anyone in the country, and they now concede that it may not show the lesion present, but that it may even distort the normal, as the ureter does move freely in its upper part if normal, and if the kidney drops, it contracts longitudinally, as much as two or three inches, unless it has a fixed point that prevents such contraction. I have a number of plates showing this fact. I should like to call Doctor Spitzer's attention to the fact that this lesion occurs fully as often on the left side as on the right, and, too, that collargol will not cause hemorrhages from the kidney, if properly used, and, too, that it will accentuate stone shadows if examined an hour or two after injection. I should like also to call his attention to this, that I do not claim originality for the method of injecting an opaque solution; that credit has been given to the proper person, but I do claim originality for the method of standing them upright, and in exactly reproducing the conditions of their attacks, and of making an accurate diagnosis possible in these cases that would otherwise have to go on suffering pain over long periods of years, in many cases, before they could possibly be diagnosed by any of the older procedures. Further, in the case where he says his "picture shows a ureter so completely kinked to make a perfect circle," that a circle is not a kink, and that very likely had he withdrawn the catheter it might have shown an angulation of the ureter had he filled it with any opaque substance. I emphasized the statement that unless the obstruction were sufficient to give symptoms that I would not consider that it should be operated.

I wish to also emphasize that it is absolutely necessary that you have the aid of a thoroughly equipped expert radiologist in this work; otherwise you will get nearly a hundred per cent disappointments.

Any member desirous of preparing a paper for the Glenwood Springs meeting of the Society, October 7, 8 and 9, should communicate at once with Dr. W. T. H. Baker, Pueblo, chairman of the committee on scientific work.

In serious illness, especially in doubtful or difficult conditions, the physician should request consultation.—Principles of Ethics, A. M. A.



## Constituent Societies

### EL PASO COUNTY.

The regular meeting of the **El Paso County Medical Society** was held at the Antlers hotel December 11, 1912.

There were forty members present and one visitor.

The minutes of last meeting were read and approved.

Dr. Boyd reported that his committee to investigate the new speed ordinance in the city of Colorado Springs, succeeded in having the city council give physicians certain privileges in speeding to emergency calls.

Dr. Morrison read a letter from Dr. Todd of Boulder, stating his desire to do any special work that may be sent to him on intestinal parasite pathology.

Being the annual meeting, there was no regular program.

Dr. Friedman gave a very interesting report on his brother's new and thus far most successful treatment for tuberculosis, it being a translation mostly from his brother's report in the *Berliner Klinische Wochenschrift* of November 16th.

Dr. Grimell was reinstated to membership.

Dr. Reed and Dr. Goodson were elected to membership.

Officers elected for the coming year were:

President, Dr. Beverly Tucker.

Vice president, Dr. Boyd.

Secretary, Dr. J. H. Brown.

Treasurer, Dr. Gilmore.

Delegate to State Society meeting, Dr. Grover.

Society adjourned.

J. H. BROWN, Secretary.

### OTERO COUNTY.

At a meeting of the **Otero County Medical Society**, which was held in La Junta on December 11, officers for the ensuing year were elected. Dr. J. A. Lawson of Rocky Ford was elected president of the society and was elected as one of the Board of Censors. The next meeting of the society will be held in Rocky Ford on Tuesday, January 9.

Officers were elected in the meeting last week as follows: President, Dr. J. A. Lawson of Rocky Ford; vice president, Dr. H. C. Miller of La Junta; Board of Censors: Drs. L. P. Barbour of Rocky Ford, H. E. Hall and J. L. Kearns of La Junta.

Dr. Jesse Stubbs, the retiring president, was elected delegate to the annual convention of the State Medical Society, which convenes in Denver next September.

### ANNUAL REPORT FOR THE BOARD OF TRUSTEES, MEDICAL SOCIETY OF THE CITY AND COUNTY OF DENVER.

A very short time ago this society was possessed of neither property nor funds, and in

consequence we had few business cares or responsibilities. Conditions have changed; we are now the owners of one of the best medical libraries of any county medical society in this country. We have an endowment fund of \$6,700, the proceeds of which are to be used for library purposes. We have recently come into possession of all the property of the Denver Academy of Medicine through an arrangement entered into three years ago. In that agreement we were to put ourselves on a financial footing to take care of the library. We were given a trial possession of the library for three years. During that time we were to demonstrate our fitness to become its permanent owners. That we have proven worthy of that trust is shown by the recent act of the Board of Trustees of the Denver Academy of Medicine in giving us a deed to all its property, consisting of its library of approximately 11,000 volumes, the Eskridge endowment of \$1,200 cash balance in their treasury of \$49.00 and all their furniture and fixtures.

The Denver and Gross College of Medicine has presented us with an endowment of \$5,500, \$500 in cash and \$5,000 in the form of a promissory note due next July, the earnings from which are to be used for library purposes. We have entered into an agreement with the International Trust Company to act as our trustee for the investment and administration of all endowment funds. The object of this arrangement is to place these funds upon such a sound business basis that all donations by gifts or bequest will be safely administered. We hope that this good business arrangement will encourage our members to look with favor upon our library endowment fund to the extent of adding early codicils to their wills. The Denver and Gross College has been very generous in giving us a large number of very old medical books of great historical value, thus strengthening a part of the library that was weak. They also gave us \$200 for the purchase of a fine office desk and some special files; also to pay the expense of shelf listing the books in the basement. The pictures which you see on the walls were donated by the originals and various members of the society.

Attention is called to the large amount expended this year upon the library, approximately \$1,700. Some of this expenditure is in the nature of permanent improvement and will not have to be duplicated in the future. That portion of the library which is in the basement and that part which is housed by the City Public Library has all recently been arranged and shelf listed, and in consequence is just as available as that portion on our shelves in the library room. This has meant some extra expense in addition to that provided for by the Denver and Gross, but it was paid for out of the \$49 given us by the Academy of Medicine.

The manner in which the library has improved, both in quality and quantity, in management and usefulness, during the three years of our trial ownership is a matter in which the members can take pride.

The Board of Trustees is endeavoring to conduct the affairs of the society on sound busi-

ness principles. The collection of dues was pushed vigorously during the first two months of the year, which resulted in an unusually small number having to be suspended for non-payment. Membership in this society is valuable and no one can afford to be dropped from its rolls.

The membership record book was placed in the library early in the year. Our constitution requires that every member must sign it. Those who have not done so should give the matter their early attention.

During the early part of the year the revised constitution and by-laws were printed, in the forepart of which is the historical data of the society. We now have a complete file of the records of the society from its first meeting to the present time. In the back of the pamphlet is published a list of members, giving the dates of their election and addresses. Back of this is printed the rules of the library. Members not having this book may obtain one by calling for it at the library.

Under the section in the by-laws for the formation of sections, this board passed favorably upon the formation of the Section on Obstetrics.

We would suggest that since the society is so large it is not feasible to send flowers in all cases of death of members. In the past flowers have been sent only in certain instances. This shows a favoritism which it is unwise to continue. For these reasons we would recommend that the practice be discontinued.

We have exceeded our income this year by \$369; however, \$200 of this was given us by the Denver and Gross College of Medicine and \$49.97 by the Academy of Medicine, so that we actually exceeded our income \$119.03. This amount would be covered by expenditures for permanent improvement of the library in completing files that were urgently demanded for references purposes.

MELVILLE BLACK,  
President Board of Trustees.

#### ANNUAL BUDGET FOR THE YEAR 1913.

##### Estimated Income.

Dues from members.....	\$3,200.00	
From library endowment fund .....	385.00	\$3,585.00

##### Estimated Expenditures—For Library.

Journal subscriptions .....	\$ 500.00	
Book purchases .....	200.00	
Journals to complete files..	150.00	
Binding .....	250.00	
Salary .....	600.00	
Telephone .....	30.00	
Stationery .....	5.00	
Incidentals .....	60.00	\$1,795.00

##### For General Society Expenses.

Bulletin .....	\$ 350.00	
Stenographic work .....	25.00	
Light .....	20.00	
Stationery .....	25.00	

State Society dues.....	1,100.00	
Incidentals .....	25.00	\$1,545.00
		\$3,340.00

Estimated reserve balance.. 245.00

MELVILLE BLACK,  
President Board Trustees.

#### BOULDER COUNTY.

At the regular annual meeting of **Boulder County Medical Society** held January 2, 1913, the following officers were elected:

President—Frank R. Spencer, Physicians' building, Boulder.

Vice President—W. J. Bingham, Lafayette, Colo.

Secretary-Treasurer—F. H. Farrington, Boulder, Colo.

Delegate—W. L. Snair, Louisville, Colo.

Alternate Delegates—O. M. Gilbert and W. W. Reed.

Most respectfully submitted,  
CLAY GIFFIN, Ex-Secretary.

#### COLORADO OPHTHALMOLOGICAL SOCIETY.

The regular monthly meeting of the **Colorado Ophthalmological Society** was held on December 21 in the office of Dr. C. E. Walker, Jacobson Block.

Attendance, 19.

Dr. D. H. Coover presented a woman in whom anterior scleral trephining had been done for acute glaucoma, with marked relief of symptoms and recovery of normal vision.

Dr. Coover also showed the patient on whom the same operation had been done by Dr. Jackson and himself in December 1911, the eye still being quite comfortable.

Dr. Melville Black reported the case of a man in whom the symptoms of glaucoma had been relieved by trephining, although the sight was lost. A general physician had used atropin for some time before the case was seen by Dr Black.

Dr. Black presented a girl whose right eye had been trephined on account of chronic enlargement of the globe with increase of tension.

Dr. Coover presented a woman who complained of loss of vision, which was found to be due to fundus lesions, probably of the nature of circinate retinitis, at least in the left eye.

Dr. Black presented a man of 19 years whose lenses had been needled on account of punctate cataract.

Dr. Libby presented a man whose pupils had for twelve years been completely dilated, although vision was nearly normal. The condition was due to syphilis.

Dr. Libby also presented a man whose left eye had a sluggish ulcer which had begun with injury by a piece of coal.

Dr. Coover presented a girl of twelve years whose right lens was cataractous, and whose



left eye had for years had symptoms of chronic iridocyclitis.

Dr. Coover presented a man in whose right eye a cataract operation, done seven years previously, had been followed by formation of a subconjunctival cyst.

Dr. Walker presented a man whose left eye was shown by skiagraphy to contain a piece of steel, although no sign of the presence of the fragment could be obtained with the giant magnet.

WILLIAM H. CRISP.  
Secretary.

#### LARIMER COUNTY.

Regular meeting, January 2, 1913. Met in the Y. M. C. A. There were present: Drs. Kickland, Hoel, Stuver, and Drs. Newsome, Whitehouse and Kingman of the C. A. C. Veterinary College. The minutes of the last meeting were read and approved.

Dr. Kickland then read a paper on "The Causes of Increased Frequency of Micturition." He called particular attention to the necessity of careful examination in all these cases as many were produced by etiologic factors outside of cystitis—e. g., gonorrhoea, tuberculosis or foreign bodies. The paper was a very clear and concise presentation of the subject. It was discussed by Drs. Stuver and Hoel as well the visiting veterinarians from the college. The secretary called attention to the change in the State Society's by-laws which requires all dues to be paid on or before April 1st of each year or the delinquents shall be dropped from the list of membership. The question of the annual meeting and banquet in February was discussed.

Adjourned.

E. STUVER Secretary.

#### GARFIELD COUNTY.

At a meeting of the Garfield County Medical Society held on the 18th inst., the following officers were elected for 1913:

President—E. F. J. Schmitz, Glenwood Springs.

Vice President—J. M. Braden, Carbondale.

Secretary and Treasurer—A. E. Gill, Gulch.

The entertainment of the State Medical Society at Glenwood Springs next fall was discussed, and as soon as definite plans are adopted, they will be announced. The satisfactory entertainment of our guests will be our chief desire and we will be glad to consider any suggestions that may be offered.

A. E. GILL,  
Secretary Garfield County Medical Society.

#### TRI-COUNTY SOCIETY.

On Tuesday evening, December 3, 1912, the Tri-County Medical Society, comprising Lincoln, Kit Carson and Cheyenne counties, met in Burlington. Supper was had at the Robidoux Club. After supper the business meeting was held in the new hall just completed by A.

W. Winegar. During the business meeting the wives of the Burlington doctors, Mesdames Godsman, Gillette, Bergen and Merrill, entertained the wives of the visiting doctors in the parlors of the Robidoux Club, where social games of cards and pool were indulged in and refreshing fruit punch was served. After the business meeting was over all joined in a social evening of cards, pool and dancing until the visitors left for their homes on the west-bound trains.

The out-of-town guests were: Dr. and Mrs. Kennedy of Limon, Dr. and Mrs. Code of Arriba, Dr. Neff of Flagler, Dr. Blumberg of Seibert, Dr. Beachley of Stratton.

The next meeting will be held in Limon on March 3, 1913.

The wives of the doctors organized an auxiliary association to meet the same time and place as the Tri-County Medical Association.

The following officers were elected: Dr. G. H. Kennedy of Limon, president; Dr. J. V. Beachley of Stratton, vice president, and Dr. C. W. Merrill, secretary and treasurer.

## News Notes

Dr. A. P. Busy, for a long term of years superintendent of the state insane asylum at Pueblo, has resigned his position and accepted the superintendency of the new home for mental defectives at Arvada. Dr. H. A. LeMoure, the assistant superintendent at the insane asylum was chosen to succeed Dr. Busy.

Dr. Joseph D. Barry died at the Agnes Memorial Hospital of tuberculosis, December 18. Doctor Barry was a young man of good education and earnest purpose. He graduated from the University of Nebraska in 1905 and from the Northwestern Medical School in 1906. At one time he was a member of the staff of the City and County Hospital. He was 36 years old.

At the recent meeting of the Western Surgical Association, held at Cincinnati, a resolution was adopted binding the members of the organization to oppose the system of fee splitting. It was provided that no person could be admitted to the association who was guilty of fee splitting and that the penalty of dismissal would be visited upon any member of the society who followed that system of getting work.

Dr. Benjamin K. Clifford died suddenly at his home on December 29. Doctor Clifford was only 28 years old. He graduated from the Denver and Gross School and served an internship at St. Joseph's Hospital.

Doctors Mathews and Wilkinson received their friends in their offices in the Metropolitan building on Christmas day. This was their third annual reception. It is hoped that life and prosperity may permit of their giving many more.

The regents of the State University have asked the Legislature to appropriate money for the erection of a building for the medical school on ground near the City and County Hospital.

The Pueblo County Medical Society has asked the county commissioners to equip and maintain in their magnificent new court house a clinical and pathological laboratory. The commissioners look with favor upon the request. Doctor Singer told the commissioners that the doctors would like to try all their cases in the new court house and have equal privileges with the lawyers. Doctor Singer seems able to do anything except report the meetings of the Pueblo County Society to Colorado Medicine.

Dr. Carroll E. Edson had an interesting paper in the Johns Hopkins Hospital Bulletin for December, on "The Last Illness of Louis XIV."

Dr. Charles W. Thompson, a neurologist and psychiatrist from Michigan, has been added to the medical staff at Woodcroft, Pueblo. The doctor was for three years assistant physician to the State Hospital at Kalamazoo, took a special course of six months in the State Psychopathic Hospital of the University of Michigan at Ann Arbor and was for seven years assistant medical superintendent and director of clinical and laboratory work in the Michigan State Hospital at Newberry.

Extensive sleeping porches and solariums are being constructed at Woodcroft. That hospital has demonstrated that the insane are more benefited by sunlight during the day and living outdoors at night than the sane are, because they cannot have the same personal liberty. The advantages of more extended outdoor life "indoors," both for day and night, are being provided.

A "diversional occupation" department for adult insane has been incorporated with the School for Feeble-minded Children, which has been a feature at Woodcroft since 1900.

Dr. Henry Sewall and wife are inspecting the Panama Canal.

Dr. Stanley Eichberg went East in December to visit his aged father and to be present at the wedding of a brother.

Dr. F. A. Burton and wife are spending a six weeks' vacation in southern California.

Dr. E. G. Condit, Baggs, Wyo., wishes to sell his stocks of drugs at invoice price. Along with this drug store goes a very remunerative practice in the Snake River Valley.

The following invitation was issued for a New Year's reception:

"Our hope was not entirely fulfilled that our egg nog, administered last New Year's morning, would prove to be a *therapia sterilisans magna*, capable of eradicating forever the germs of headache, diplopia, brown taste in the mouth, worry, sorrow, et id omne genus.

"We therefore request you to call for a repetition of the treatment on January 1, 1913, 10-12 a. m., fourth floor Metropolitan building. Black, Coover, Freeman, Hall, Levy and Lyman."

Here is the response of Dr. Hubert Work:  
"To Doctors Black, Coover, Freeman, Hall, Levy and Lyman—Regrets:

"*'Therapia sterilisans magna'* sounds fine. I take it to be a new kind of wine.  
'Brown taste, headache or worry's' not new,

But 'et id omne genus,' is that to drink too?

A '*therapia*' with Black, a '*sterilisans*' with Hall,

A '*diplopia*' with Coover, if that were all;

But there's Levy, Lyman and Freeman yet;  
What a blessing it is Colorado went wet.

You're really good fellows not given to grog,  
But on an occasion you will serve egg nog.

You mix without spirits, or put some in  
To reach the abstainer, or those steeped in sin.

Metropolitan building? Fourth floor you say?  
I can't come to Denver or I'd call that way.

May you live forever; you're a jolly crew,  
And you bless mankind by real work you do.

Your friends will remember you New Year's day,  
Years later—long after—you've passed away."

#### BOOK REVIEW.

"Himself" or "Talks With Men Concerning Themselves." By Drs. E. B. Lowery and Richard J. Lambert. Forbes & Co., Chicago, Publishers. Price \$1.00.

The publication of this book has resulted from the demand for a non-technical statement of what every adult male should know concerning himself.

With the thought in mind that every man is the director of his own destinies, the authors do not attempt to dictate the paths that all men should pursue but rather to point out the rewards and perils incident to certain chosen lines of conduct.

Every physician knows there are but few safe books on sanitary and moral prophylaxis. Therefore a book dealing with this important subject in a sane, simple and reliable way, is appreciated not only by the laity but by the members of the medical profession as well.

In "Himself" the authors divide the male's life into four epochs: childhood, adolescence, manhood and old age.

The development of life is ably handled. They outline how the male may safely pass through childhood and the protection he needs during adolescence.

They suggest how the boy may become a man mentally, morally and physically. The period from twenty-five to fifty-five years is designated as that of manhood, and fifty-five years marks the beginning of decline or old age. No attempt has been made to go into the minute anatomy of the male generative organs and only the more common diseases of those organs are described.

Under sterilization of the unfit the recently performed surgical operation—vasectomy—is described, and indications and results given.

The questions of marriage, fatherhood, motherhood, protection of daughters, etc., are briefly but well treated.

Schemes of medical fakirs are laid bare.

The book ends with a chapter on "The Secret of Success," an essay pregnant with sound logic and wholesome advice.

F. A. BURTON.

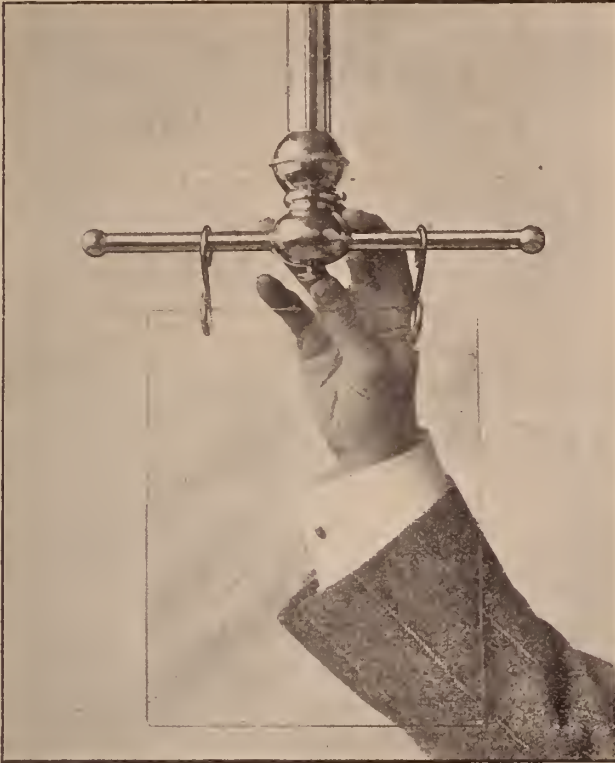


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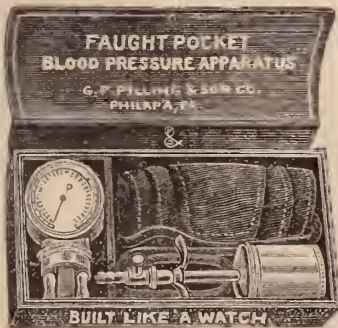
It does away with the floor stand and is therefore out of the way of the operator's feet and legs.

Not being of the bracket type, there is no sagging or getting out of position.

The glass shield is 8x10 inches, of right size to protect the operator's entire face when patient is obliged to gag or sputter while being treated.

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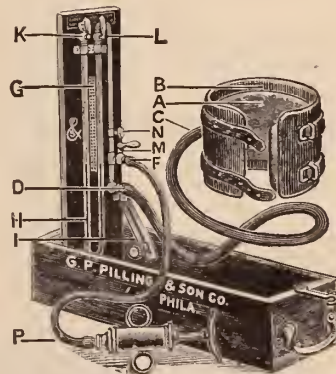


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Magnesium Chloride	-	trace
Calcium Chloride	-	trace
Sodium Sulphate	-	3.67
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THE JOURNAL OF THE COLORADO STATE MEDICAL SOCIETY  
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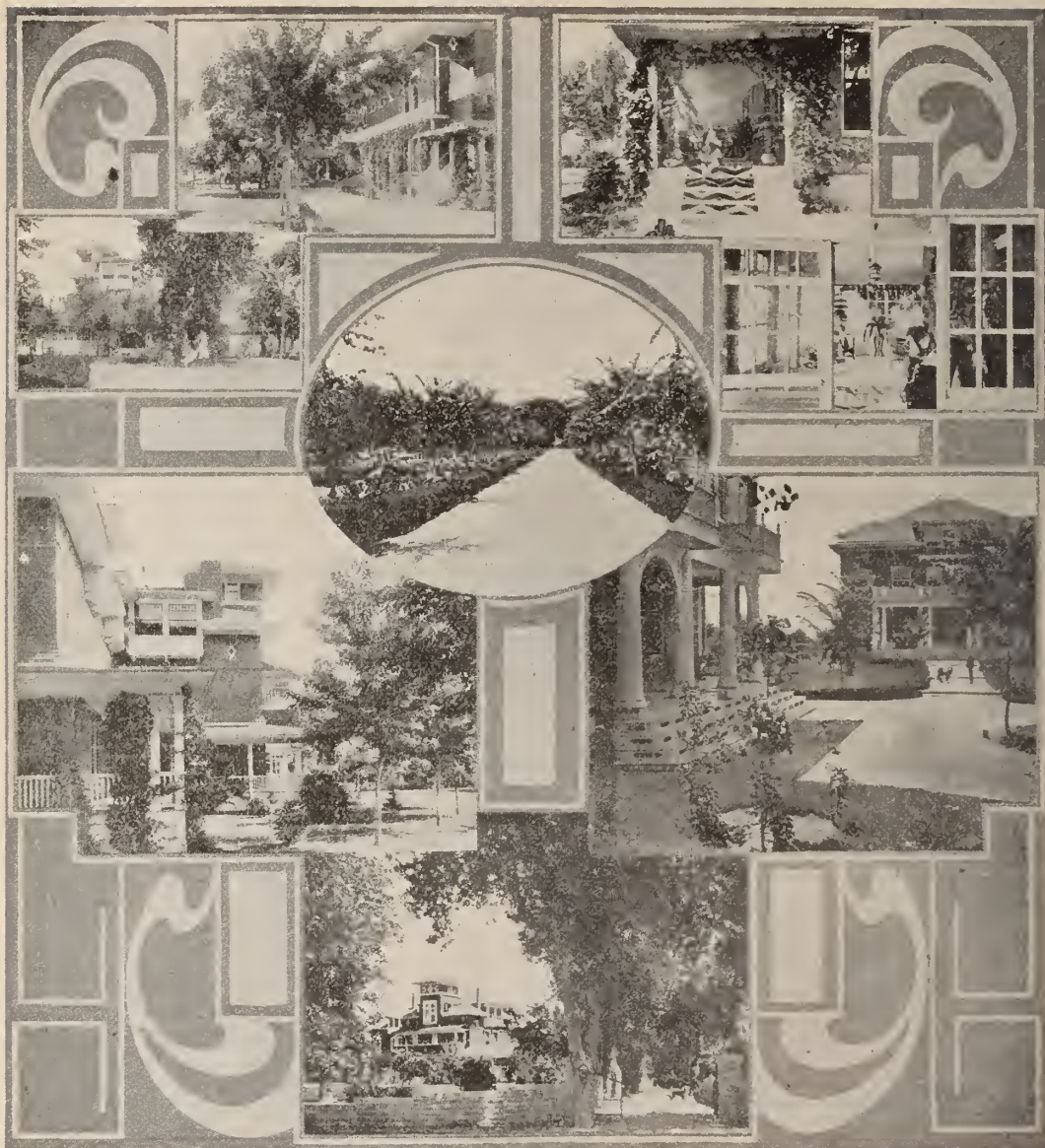
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NO. 2

## Editorial Comment

### OLD ISSUES OF COLORADO MEDICINE.

The appeal which was made for old issues and complete files of Colorado Medicine has brought a generous response. Bound volumes of the complete transaction of the Colorado State Medical Society are now placed in several fireproof buildings. One set of these transactions is loaned, permanently perhaps, to the Colorado State Historical Society and is deposited in the Capitol. The records of the Society will not fail, therefore, to become a part of the permanent history of the state.

There is still particular need of the November number for 1903. Anyone having this number which he is willing to spare will perform a duty by sending it to the secretary of the society.

The issue of last month, January, 1913, is already exhausted, and a few copies of this number will be gladly received.

### SCHOOLS OF MEDICINE.

If the news reports are to be credited, President-elect Wilson has announced that he will be no party to the formation of a medical trust. No single school of medi-

cine is to have a monopoly of the medical jobs at the disposal of Uncle Sam. This will be one policy of the President that will find no critics. But the statement of this resolution sounds like a weakening of the firm progressiveism that has distinguished the President-elect. What he should have said was that *no* school of medicine should be represented upon a government medical board or in the government service.

What has the government to do with schools? What are they, anyway? One hears nothing of schools of chemistry, schools of astronomy or of schools of mathematics. Why, then, schools of medicine? If there are such let us hope that Governor Wilson will not attempt to distribute the jobs among them, but will shun them all.

There are a few principles that lie close to the foundation of science and seem to be eternal and immutable, such as the theory of gravitation and of the conservation of energy. Every scientist accepts them today; none would pledge himself to be bound by them on the morrow. His mind must be free and alert for facts that will support or destroy his theories. He could not permit himself even to be called a gravitationist or a conservationist. He is just a man who loves the ways of Nature; who would study them and reduce them, if possible, to accurate description.

If Governor Wilson has been correctly

quoted, we would appeal from his decision. The error lying in the expression of opinion, rather than in the opinion itself, if that may be discerned through the darkening veil of language.

So far as a medical trust is concerned, it may be safely declared that Governor Wilson never used such an expression. That is a newspaper interpolation. The President-elect could not be frightened, even in a dream, by the specter of a new octopus bred by a learned profession. He knows, as a student of social questions, that the one essential attribute of a trust is monopoly. No trust can be formed that does not rest upon monopoly. A profession that makes the single requirement of learning for admission to its ranks will never be able to create a trust. Learning is, fortunately, free to every eager soul. It is, moreover, the one delicious nutriment for which the grasping privilege seeker has no appetite.

---

### THE PROFESSION AND THE PEOPLE.

---

It may be a painful bit of information to know what others think of us. If so, the pain will be of the kind that Hilton wrote of—pain that serves a useful purpose. The picture one makes in the minds of others may be fair or ugly, but one has the pleasant or tormenting assurance that it is not wholly wrong. It may be, as actual pictures drawn by the untrained usually are, out of proportion: its lights and shadows improperly balanced, but there will remain a certain rough resemblance that one cannot escape if one would. If one is bow-legged the distortion of the limbs is sure to be exaggerated. If the nose is long, it will not be more likely to escape the notice of the amateur than of the caricaturist. The important fact is that the legs *are* bowed and that the nose *is* long. If these things are observed by the uninstructed they must be the more obtrusive.

People are neither poorer nor better judges of fundamental character than they are of physical form. What they may think of one will be judged, usually, by what that one thinks of himself. What they may think of the medical profession must not be inferred from the conduct of our patients nor from the report of flatterers.

Here is a concrete answer to the inquiry: The Legislature of Colorado, now in session, supposed to represent the views of the majority of the people in political matters at least, is largely opposed to the medical profession. It believes that physicians are a selfish, bigoted body of men that seeks the enactment of laws that would limit the liberties of the people in the choice of treatment they are to receive when they are sick. The Legislature mistrusts the motives of the medical profession when it makes suggestions concerning measures looking to the public health or to the character and capacities of those that are to practice medicine in the state.

This judgment of the character of medicine and its practitioners is not local, but widespread. Hugh S. Elliot has written an article on "Secret Remedies" for the Edinburgh Review for October. It is an illuminating view of the subject as seen by British eyes. What is more germane to the present consideration is, the writer's opinion of the medical profession and the motives that actuate it in its warfare upon the traffic in nostrums.

There is a general belief that patent medicines are as good or better than the extemporaneous prescription of the physician. This belief is not limited to the simple and credulous, but it has a wider and more respectable distribution. The London Chamber of Commerce says, "Proprietary remedies constitute a system of medication that is unsurpassed for simplicity, uniformity and cheapness. The public, having learned that a certain medicine will bene-



fit certain conditions, can obtain that medicine at any chemist's in the United Kingdom at a mere fraction of the cost of the same class of medicine when obtained through a physician's advice." The inference is that if physicians oppose the sale of such preparations they do so because such trade affects their pecuniary welfare.

It is easy to confute this opinion by saying that the determination of the underlying condition in a case of illness is the difficult thing that must be attended to before any line of treatment can be adopted. It is not the purpose of this comment, however, to try to overcome the unpleasant opinion of the medical profession and of its public and private activities. It serves a present purpose to show that such an estimate of us exists and is too general to be comfortable and that we are largely responsible for it. We have, wittingly or unwittingly encouraged the people in the belief that certain medicines were specifics for certain diseases. If we have not done so directly it is always implied when a prescription is left upon the patient's table, unless the limitations of the preparation are explained.

This writer in the *Edinburgh Review* contends that the prescriptions of the physician are as secret as those supplied by advertisers. A prescription is a cypher letter from the doctor to the druggist. The purpose of the cypher being, as the patient believes, to prevent his knowing what has been ordered for him. The impression the patient receives from this is that the physician believes his own medicine to be dangerous or that he is opposed on financial grounds to self-medication and wishes the patient to call again if he should be similarly ill, since he is unable to repeat the original prescription.

Wouldn't it be well to try to overcome this air of mysticism that we are, perhaps unconsciously, creating about the practice of medicine? As Dr. Wiley suggested when

he made his visit to Denver, why not write our prescriptions in English and be a little more careful to explain their purport and purpose to the patient?

In 1774 John Wesley, looking to the physical as well as to the spiritual welfare of his people, wrote a book on "Primitive Physic, or an Easy and Natural Method of Curing Most Diseases." In the preface to this work he makes the modern complaint that there was a growing tendency to employ complicated and mysterious methods of treatment.

"Thus far physic was wholly founded on experiment. The European as well as the American said to his neighbor, 'Are you sick? Drink the juice of that herb and your sickness will be at an end. Are you in a burning heat? Leap into that river and then sweat till you are well. Has the snake bitten you? Chew and apply that root and the poison will not hurt you.' But in the process of time men of a philosophical turn were not satisfied with this. They began to inquire how they might account for these things? How such medicines wrought such effects?"

Thus from the study of the body, its diseases and the substances used in the treatment of them, medicine was rapidly becoming too complicated a subject for the layman to meddle with.

Wesley thought it time for someone with the welfare of mankind at heart to reduce therapeutics of simple disorders to such terms as might be understood by anyone. He adds:

"Even in the last age there was something of this kind done, particularly by the great and good Dr. Sydenham; and in the present by his pupil, Dr. Dover, who has pointed out simple medicines for many diseases. And some such may be found in the writings of the learned and ingenious Dr. Cheyne."

What Sydenham and Dover and Cheyne and Wesley have done might we not profit-

ably imitate? It is not proposed that books upon popular therapeutics be made more numerous, but that we come into closer understanding with those we serve. We will not be able to maintain the confidence and friendship of the people so long as a lofty wall of impenetrable learning stands between us.

### AN INTERESTING LETTER.

The following letter, recently received by Dr. Charles A. Powers from his friend, Prof. V. Soubotitch, a distinguished Serbian surgeon, will doubtless interest our readers as being one of the first official expressions regarding the medical and surgical conditions in the present Balkan war.

The personal portions of the letter are omitted for obvious reasons.

Belgrade, 12th December, 1912.

Dear Doctor Powers:

Our army has indeed executed its task well, and we trust that Europe will not refuse us access to the open sea; it is true that our nation is small, yet it is a nation with great love of liberty.

This war has been very bloody and terrible; bad weather, rain, snowstorms, swamps and difficult mountainous country made heavy demands on the endurance and capabilities of our soldiers. Nevertheless, they overcame all these difficulties, equally as well as they did the obstinate, cruel and hardy adversary, because they were convinced of the justice of their cause and exalted by the aim of freedom.

Our losses were tolerably large. Sickness, until now, has not shown itself overmuch.

The character of the gun-shot wounds, especially those wounds caused by the small bore gun, were in general of a benignant nature; much less the case with wounds from a large bore, also used by the Turks, from shells and from shrapnel.

The first bandage used, which every soldier carried was the "ütermöhlen." The treatment of the wounds was quite conservative; operating in general was seldom practiced, and only following exact indications; amputations consequently were very seldom made.

Projectiles did not often remain in the body of the wounded.

The new Turkish pointed bullet did not appear to differ in its effect from the cylindrical bullet; it was often found in the body with its point reversed.

Penetrating skull shots through rifle shooting produced considerable mortality.

In the case of tangent wounds the patient would be trepanned; traumatic aneurysm was often observed; with few exceptions ligatures

were always applied because with wounds three to four weeks old it was difficult to make seams on the brittle walls of the vessels; injuries to the nerves were often observed, frequently nerve stitches were employed.

Lung-shots proved relatively favorable; belly-shots were treated, in general, conservatively, with good success.

Those fractures of the long tube bones, through small bore shots, healed evenly, as a rule.

Often the same projectile showed several shot openings.

Upon the whole our experiences agree with those of our American colleagues.

If I compare the injuries sustained in this war with those I witnessed in the wars of 1885 and 1876, I may say that Modern Surgery has made great progress on the road of humanity; and in its name, and in the name of progress and civilization, we doctors employ our skill everywhere and always, singly and in association, in peace and in war.

To you and our American friends the most friendly and sincere greetings are sent by,

Your Sincere Friend,

V. SOUBBOTITCH.

### ETIOLOGY OF EXCESSIVE VOMITING OF PREGNANCY.

J. H. Martin states his views upon this subject in the British Medical Journal, May 18, 1912. He believes that the various explanations of the causes of excessive vomiting during pregnancy may be classified under three main groups: (1) toxemic, (2) reflex, and (3) neurotic. The theory of the toxemic origin of the hyperemesis is the most rational one. Dirmoser believes that the excessive vomiting is a reflex irritation of the central nervous system, commencing in the internal sexual organs, and through the secretory and motor nerves of the sympathetic, leading to biochemical changes in the digestive tract with the increased production and absorption of toxins. Cazeaux lays stress on the severe constipation associated with excessive vomiting. Williams emphasizes the importance of the high ammonia coefficient of the urine. Behm refers the autointoxication to syncytiolysin. Freund believes the source of the toxins is in the periphery of the ovum or corpus luteum or placenta. As regards the reflex causes it is stated that many observers have noted that displacement of the uterus is a frequent cause of hematemesis gravidarum. Other causes are hydramnios and twins; rigidity, deep tears, and erosions of the cervix, and enlargement and congestion of the inferior turbinate bones. The neurotic cause of the excessive vomiting is frequently hysteria.

ANY MEMBER DESIROUS OF PREPARING A PAPER FOR THE GLENWOOD SPRINGS MEETING OF THE SOCIETY, OCTOBER 7, 8 AND 9, SHOULD COMMUNICATE AT ONCE WITH DR. W. T. H. BAKER, PUEBLO, CHAIRMAN OF THE COMMITTEE ON SCIENTIFIC WORK.

## Original Articles

### FUNCTIONAL TESTS OF THE HEART.\*

CLOUGH T. BURNETT, M. D.  
BOULDER.

A functional test of the heart is any test to determine the amount of work done at any given time by the human heart.

So many factors are concerned—the systolic output, the pulse rate, the peripheral resistance and the velocity of the flow in the vessels—that the test becomes a very complicated one.

The history of the case is of great importance. What is the effect of usual exercise? We are not surprised if an office man residing in Chicago complains of his inability to climb Long's Peak without shortness of breath, but we should be concerned if one resident in this altitude, is unable to walk on the street without puffing. This may be only one of the signs of functional insufficiency. Does he get out of breath when he goes up stairs? How many pillows does he use at night? Does he have palpitation when he hurries? Does he tire out more easily than formerly? All of these simply mean, does his heart deliver the proper amount of blood to the tissues at the proper time?

In reviewing the early work on the diseases of the heart, one is struck with the fact that practically all the attention is directed towards morphological changes in the walls of the heart and its valves. The heart muscle is considered purely as a propulsive organ. Now it is necessary to recognize not only this propulsive action but also its action in narrowing valves, fixing valves and directing currents by this means. Whenever the heart is damaged by

infection there may be anatomic and functional injury, probably always the latter. Recovery may be complete as to both types or only partial, leaving an anatomically abnormal heart, which is functionally normal, or we may have an anatomically normal heart but a muscle so weakened as to be incapable of normal function.

If then palpation, percussion and auscultation may show a normal heart in one of known weakness how may we determine with any degree of accuracy the functional strength of the organ? I shall pass over at first the various methods intended to show the reaction of the heart to accurately measured work and take up some of the time honored signs of the older physicians, as accurate, in a way, as those of Thabet Ebi Abraham, who according to the legend was able on feeling of the pulse to tell what had been the diet of his patient, even to differentiating the kinds of milk taken. These signs are the position of the patient, color, gait, type of breathing, cough, expectoration. Further knowledge may be gained from a study of the organs of digestion and excretion and as stated earlier an inquiry into the effect on the patient of simple exertion. Some of these are not perhaps as accurate as some of the later day methods but when considered in the aggregate will often give one a better idea of the value of a heart to its possessor than any of the more elaborate methods entailing unusual conditions.

Auscultation and palpation will demonstrate an extrasystole and its time in the cardiac cycle. While the cause of extrasystole is still obscure its clinical significance is quite plain, i. e.; an irritable condition of the heart. This does not always mean a functionally defective heart for we quite commonly find people who go through life in apparent health always showing an extrasystole but no other sign of heart disease. On the other hand, toxic influences operating outside of the heart

\*Read at the annual meeting of The Colorado State Medical Society September 24, 25, 26, 1912.



will often be the cause of an extrasystole and, finally, myocardial and inflammatory changes in the lining of the heart may induce this abnormal contraction. By auscultatory methods we may learn considerable as to the functional condition of the organ. Where there is hypertrophy and yielding of the ventricles to increased peripheral pressure there will be a lengthening of the first sound; where there is simple dilatation there will be a shortening of the first sound. We find the same kind of sound from a weak ventricle, not dilated, as in fatty degeneration. Again in hypertrophy the first sound will be low pitched and dull, while in dilatation it is high pitched and clear. Reduplication of the first sound means asynchronism of right and left ventricle due to the two aorticulventricular valves closing at different times, or possibly because the full tension of the cusps does not occur at the identical moment. This either points to a commencing failure of power of one or other ventricle, such as may occur in chronic renal disease or obstructive pulmonary disease. When the heart is feeble and rapid the second sound is short. When the tension in the lungs is increased this sound is accentuated and frequently reduplicated. Similarly when the tension is high in the systemic arteries (renal diseases) the aortic second is accentuated. The tic-tac heart beat is often connected with renal disease and its beginning heart failure. The systolic interval is prolonged at the expense of the diastolic, making the intervals between the first and second and the second and first equal. Again an approximation of the first and second sounds points to extreme weakness.

Now turning our attention to the tests more especially intended to demonstrate the functional strength or efficiency. A search of the literature has furnished me with only a few functional tests: I shall take the liberty of quoting freely from

various authors. Given in the order most frequently used they are: (1) The increase in pulse rate occurring when the patient stands up after reclining. (2.) The pulse rate change following the antagonistic action of two sets of muscles when used simultaneously. (3.) The change in blood pressure following sudden and forcible compression of the femoral arteries. (4.) Blood pressure changes due to exercise.

Considering first the test dependent upon change in posture; "When a normal individual rises from the reclining to the standing posture his pulse-rate becomes accelerated, but the amount of acceleration is usually less than twenty beats per minute. In persons with failing hearts this change of rate is more than twenty." (Stephens.)

While this test is of great value and cannot be lightly discarded, one must ever keep in mind certain classes of individuals in whom it is unsafe to use this test as a criterion. Oftimes in the neurasthenic with enteroptosis, on making this change in position, we will by means of gravity temporarily so embarrass the heart as to increase the rate considerably, yet there is no evidence of cardiac weakness. Also these same people and normal individuals may be so subject to psychic influences as to cause an appreciable increase in the rate above the normal limit. Finally in the cases of myocardial change especially in the sinus region, the heart is already undergoing as many contractions per minute as this region is capable of generating. When one who is employing this test he may well complement it by Schapiro's Test in which we note the decrease in the rate when the patient lies down. There should be a normal slowing of from seven to fifteen beats per minute. In uncompensated valvular diseases and in any case where the heart is seriously weakened this normal difference disappears. Cabot (1)

was in doubt whether this test would be of value in diagnosing cases of incipient cardiac disease.

Herz (2) has suggested a test called the Self-checking Test (Selbsthemmungsprobe.) The pulse is counted in the sitting position over a long enough period to insure a constant rate per minute. The patient then contracts all the muscles of his hand and forearm forcibly and very slowly flexes and extends the forearm, all the while concentrating his full attention upon the procedure and antagonizing his own movements with as much force as possible. Another method of carrying out this test is to slowly flex and extend the forearm endeavoring at the same time to avoid contraction of the muscles. In the latter method the physician supports the patient's elbow with his left hand while with his right hand he guides the motion without assisting or hindering in any way. Herz claims that while a normal heart will suffer no change in rate by this procedure, a weakened heart will be slowed from five to twenty beats per minute.

A third test known as Levy's Test or Katzenstein's Test (3) is dependent upon the well-known fact that an increase in the peripheral resistance as by compression of the abdominal aorta will produce a marked rise in blood pressure. Laboratory experiments on animals have demonstrated that this fails if the heart is exhausted from any cause. Katzenstein uses this as a test of cardiac efficiency by digitally compressing both femoral arteries at Poupert's ligament and taking a systolic blood pressure reading from the brachial artery. In normals we note within from two to three minutes a rise of from five to fifteen millimeters of mercury during systole. With an hypertrophied heart this may rise even higher, while with a weakened heart there will be little or no rise in pressure. (Levy 4.) This manipulation is said to produce

considerable pain and discomfort, especially in neurotic persons.

A fourth test concerning which much has been written is Gräupner's Test (5.) Gräupner found in the course of treatment of cardiac cases at Nauheim that the blood pressure response was quite different from that of normal cases. Gräupner states that after the normal increase and decrease in the pulse rate has taken place as a result of exercise, there occurs a gradual increase in the systolic blood pressure which reaches its maximum several minutes later than the maximum pulse rate and then gradually falls to or below the normal. This he called the "normal Erholung." If a heart is but slightly weakened this blood pressure change occurs to a lesser extent and somewhat later than the "normal Erholung." In a greatly weakened heart the blood pressure will fall from the start instead of increasing, later reascending to the normal. One may easily apply this test to himself and without a manometer. Run up stairs or undergo any other sudden exertion. Then stop and count your pulse. If you are normal there will be an immediate acceleration. Following this is a slowing and it is during this period, or after the heart has entirely slowed down that you will become aware of the "thump-thump" of the heart against the chest wall and the increased strength of the pulse. Gräupner used a weight and pulley ergometer. Cabot has modified this by substituting a measured amount of stair-climbing. The latter author was able to verify Gräupner's findings with the normal cases and the seriously weakened hearts. While he found many variations in the blood pressure reading taken from cases with slightly damaged hearts, he concludes that the test is of real value, as a means of verifying "doubtful diagnosis of the weakened hearts" or to "support us in the belief that the heart is normal when the patient

has complained of subjective disturbances which might have been interpreted as evidence of passing congestion."

The sphygmogram and cardiogram have been suggested as of value in this connection. These methods reveal rhythm of movements and furnish suggestions of high and low pressure, but give us very little more information regarding the efficiency and energy of the heart's movements than can be obtained by simpler methods.

The determination of pulse pressure is of great value since it may be taken as a measure of the systolic output and this multiplied by the pulse rate serves as a measure of the heart's output per minute. It is necessary in this connection to bear in mind that it is neither the systolic nor diastolic pressures alone which give us an index of the heart's efficiency and the resistance which must be overcome by it, but rather the relation of two to each other which we call the pulse pressure. This may be obtained by means of any one of a number of instruments as the Tyco, Stanton, Riva-Rocca, Erlanger. A still later method of differentiating between organic and functional cardiac disease is by means of the electrocardiograph. I have not had any personal experience with this instrument and so will quote from Dr. Barker of John Hopkins. (6.) "Students of bioelectric phenomena have long known that in all parts of the body in which active changes go on, differences in electric potential arise which result in the passage of the so-called "action-current" from points of higher to points of lower potential. Thus in the heart, the part at rest is positive as regards the part contracting; for example, when the atria contract an action-current arises on account of the difference in potential between the base of the heart and the apex. Later when the ventricles contract, there is an action-current in the opposite direction. Waller

showed that these action-currents in the heart affect the potential of the tissues of the whole body and that it is possible by connecting electrodes with the moist skin to collect the currents and measure their strength by means of an electrometer or galvanometer. The best conditions for collecting these currents are afforded by placing the right hand and left foot in solutions containing the metal electrodes, the former corresponding to the base of the heart, the latter to its apex. As the currents are extremely small their detection was so difficult that a clinical application seemed out of the question until the Dutch physiologist Einthoven applied first the capillary electrometer and later devised his thread-galvanometer for the purpose. Electric currents passed through the magnetic field undergo, as is well known, a deflection which increases either with the strength of the current or the strength of the field. Einthoven passes the current from the heart through a microscopic thread (string) made of quartz or platinum, one to three microns in thickness, suspending in a very strong magnetic field; the movements of this thread are photographed through an illuminated slit on a rapidly moving film under a lens magnifying several hundred times.

The photographic record yields a curve known as the electrocardiogram. An analysis of this curve taken from the normal heart shows five oscillations, P, Q, R, S and T, three of them being elevations (P, R and T) and two of them depressions (Q and S.) The first elevation P corresponds to the contraction of the atria, the other movements represent the electromotive changes during the contraction of the ventricles. If two men hold hands one gets a composite curve of the bioelectric changes of the two hearts. (Samoiloff.) In the electrocardiogram from a pregnant woman two independent rhythms are distinguishable, one belonging to the mother, the



other to the foetus (Cremer:) It seems probable that in twin pregnancies three electrocardiograms will be distinguishable in the one tracing, though as far as I know, the observation has not yet been made.

Once an electrocardiographic station is set up it may be used for making records not only from patients at the station itself but from patients at a distance, provided the connecting wires are available. Einthoven has connected his laboratory by wiring with the wards of the Leyden Hospital a mile and a half away and so is able to take the curves without moving very sick patients. The possibilities of such "telecardiograms" may make necessary only a moderate multiplication of electrocardiographic stations.

Though the method is still very new the application to the study of clinical cases already made gives much encouragement for results from its further use. Particularly in the analysis of myocardial disturbances (organic and functional) a domain in which clinical investigative methods have hitherto been singularly deficient, the electrocardiograph promises a good deal."

#### SUMMARY

The first test mentioned consisting of observing the change in pulse-rate occurring on change of position and the last (Gräupner's Test) are easily applied and require no special apparatus and in most cases are fairly reliable. But these are dependent upon numerical changes in blood pressure or pulse rate, and how great variations one may find in these we all know. Will not simple observation of the patient during a somewhat strenuous exercise furnish us with much more reliable data? The labored and rapid breathing, the evidence of air hunger, as shown in the dilated nostrils and the peculiar sucking in of the corners of the mouth—these and many other signs often appear earlier and are certainly easier of observa-

tion than the blood pressure changes. The following anecdote well illustrates this point: "Once a young physician climbing up a steep hill in company with an experienced physician described to him in rapid conversation his cardiac troubles and palpitations. The elder physician replied: 'You have a nervous heart and no organic heart trouble, else during climbing you would not continue to talk, but rather would gasp for breath!'"

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#### TESTS OF KIDNEY FUNCTION.\*

CLAY GIFFIN, M. D., BOULDER.

Any dependable test of renal function must fulfill the following requirements:

- (1) It must demonstrate the degree of functional impairment for the elimination of each and every product excreted by the kidneys normally or pathologically.
- (2) It must show the relative capacity of the kidneys distinguishing between right and left.
- (3) It must show the amount of reserve power or the amount of additional work above the usual, which the kidneys can do under stimulation.
- (4) The technique of its application must be within the resources of the average practitioner.

The demands of surgery are somewhat less exacting. Demonstrate the pathology of a "surgical kidney" and the direction of therapy is patent, therefore the cystoscope with its ureteral catheterization with

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the phenolsulfonephthalein test (to be described later), has all but settled the difficulties in this field. Add to these resources the knowledge gained from radiography, and we find surgery rejoicing in a conceit thus far untenable for internal medicine.

For the internist the problem is a broader one and is beset with as many difficulties, doubts and unknown factors as is the subject of metabolism itself. The kidneys secrete or excrete some dozens of known substances. In pathologic states the urine may show an increased output for one of these constituents and a diminution for another. Such is the condition in interstitial nephritis, for example, where the daily elimination of urea is below normal while the output of water is much increased. The renal parenchyma is differentiated for the purposes of secretion, excretion and reabsorption. On histologic as well as upon laboratory observations, we may well believe that disease of the renal tubules must cause different rates of excretion for different products.

There are, possibly, as many unknown as known urinary constituents. Coma sometimes ensues in nephritides whose output of urea is normal or nearly normal. This has been ascribed to the retention of a toxin as yet unknown. The urine of eclamptics is highly toxic for animals and so it has been thought probable that death in eclampsia is due to toxin much of which is retained in the circulation because of impaired renal impermeability. In either of these diseases, perhaps it is the power to excrete specific toxin which we should determine, rather than permeability for urea or phenolsulfonephthalein.

Appreciating the importance of differential excretory rate, von Noorden in Germany and others in this country, particularly E. F. Wells of Chicago, have attempted to put function testing on a sound physiologic

basis by testing kidney power for each element separately. The method for urea as outlined by Dr. Wells at the Los Angeles session, is as follows: Total nitrogen or urea determinations are first made with patient fasting or on proteid free diet. This shows the amount of nitrogen resulting from tissue destruction. Beyond this, meat of known analysis is added to the diet indefinitely increasing amounts. The amount of proteid ingested being known, and the amount of nitrogen resulting from catabolism having been determined, it is a simple matter to calculate the total amount of nitrogen which should appear in the urine. If the meat is further increased the time will come when the kidneys can no longer excrete all the urea resulting from its catabolism and hence the amount of urinary nitrogen ceases to be proportional to the proteid intake, and the point where the urea curve begins to drop marks the point of total capacity for the excretion of urea. Other substances must be tested in similar manner—water, sodium, chloride, phosphates, sulfates and on through the list of known urinary ingredients.

This, the physiologic method, has one very great advantage—it gives a basis for therapy and this from two points of view. In the first place we determine figures beyond which the patient must not presume in his diet and similarly at the beginning of the experiment we determine the minimum amount of proteid necessary for body maintenance under known conditions of rest or exercise. Diet regulation then becomes a matter of accuracy. Secondly, just as with caution, increased tolerance for carbohydrates can be produced in diabetes, so in nephritis tolerance can similarly be attained for proteids by first restricting and then gradually increasing the nitrogen in the dietary. In one of our own cases this tolerance was increased from 200 to 400 grams of beefsteak.

If such a method has therapeutic advan-

tages, it none the less has technical disadvantages, for to be of value it must be carried out under circumstances where the diet can be controlled to a gram and the laboratory in which the analyses are made must have an equipment of little less than university standard. Even with these objections answered, the method demands for accuracy much practice and an abundance of time. The same objections hold regarding the methods of cryoscopy and electrical conductivity of the urine. Both of these are of occasional use in the physiologic laboratory but they, after all, despite their relative complexity, give information scarcely more reliable than the simple specific gravity test.

Another line of investigation attempts to show kidney power for the excretion of normal and pathological substances, by the relative amount of one of several drugs recovered in the urine after the administration of that drug by mouth or by hypodermic. Methylene-blue, sodium salicylate, rosaniline and indigo-carmin are among the many which have at some time had their day of popularity. None has proven satisfactory, but to this list Rowntree and Geraghty of Johns Hopkins, have added a drug which has much to recommend it. This drug bears the name of phenolsulfonephthalein. It was first prepared by Ira Remsen and in essential his technique is still utilized for its derivation. Formerly we produced phenolsulfonephthalein in our own laboratory but at the present time it may be obtained in sterile glass ampules at moderate price from our pharmaceutical houses. Its derivation is so tedious, time-consuming and exacting that it is scarcely to be recommended to others than manufacturing chemists. Regarding the properties of the drug—in powder form it is of brilliant red crystalline structure, readily soluble in water. In alkaline solution it possesses a brilliant purple red color. In acid solution its color varies from yellow to or-

ange. It is extremely sensitive as an acid indicator. It is practically tasteless and odorless in solution and is devoid of toxicity. Its hypodermic injection in the usual weak solutions employed is not more irritating than is normal salt solution.

Given a case to be tested, the following is the method of procedure: Half an hour before the administration of the drug, 500 cc. or thereabouts, of water, is given by mouth. Immediately before the test the patient is catheterized or voluntarily passes his urine. Six milligrams of the drug suspended in one cubic centimeter of sterile water are injected subcutaneously at the insertion of the deltoid. Beyond this it is generally sufficient to provide the patient with two bottles into the first of which he is instructed to pass all his urine at the end of one hour, and into the second at the end of the second hour. These two bottles are then to be presented at the laboratory for examination. Obviously in the case of prostatic enlargement or other obstructive lesion, the urine must be obtained through the catheter in each instance. In the series of cases published by the originators of the test, the time of first appearance of the phthalein was always noted, but inasmuch as this is of secondary importance it may as a rule be omitted except when the ureters have been catheterized for the purpose of determining the relative capacity of the two kidneys.

In the laboratory the contents of each bottle of urine is made up to definite volume with sterile water and alkalized with NaOH. The exact percentage of phthalein is now to be estimated by a colorimetric method. The Duboseq instrument is probably the most accurate for the purpose, but lacking such an instrument fairly accurate results may be obtained by the use of two one hundred cubic centimeter graduated cylinders. Into one of these the urine to be examined is poured until it reaches the 100 cc. mark. Into the other a solution



of phthalein of known strength is poured until as the observer looks down the two graduates, the intensity of color in the two becomes identical. Percentage and amount of phthalein can then be estimated from the figures on the graduates. More detailed descriptions of this technique have been published so generally that it seems inadvisable to further elaborate here. The complexity of the procedure is not greater than that of determining hemoglobin percentage with the Gower or Sahli instrument.

If the site for injection is the one mentioned above and the dose six milligrams, the following rules are invariable for normal kidneys:

The drug first appears in the urine in from 5 to 11 minutes.

During the first hour 40 to 60 per cent. of the dose is excreted.

During the second hour 15 to 25 per cent. should be recovered.

For the two hours 60 and 85 per cent. mark the limits of normal variation. Pathological kidneys except possibly in the case of chronic parenchymatous nephritis always show a decreased permeability and apparently at least the more extensive the pathology, the less phenolphthalein excreted.

Because of its quick appearance in the bladder after its injection and because of its rapid elimination during a period within which the ureteral catheters can be left in place, the drug at once found favor among urologists and surgeons. Favor seems to have gone but little farther, however. The internist has regarded the discovery much as he regards an anastomosis clamp—a sometimes useful adjunct for the other man in the other field. If I am not mistaken in this impression, I should like to urge more general use of phenolsulfonephthalein in medical cases.

Although admitting that the injection of this compound is the utilization of an en-

tity generally entirely foreign to kidney function, and hence objectionable from a physiologic standpoint, one may still urge its use empirically for the study of chronic and acute nephritis because its low elimination always means kidney disease, a fact of obvious prime importance; secondly, because it will serve at times to differentiate kidney disease from other diseases, notably cystitis, coma due to other than kidney disease, sequelae of heart disease, sequelae of arterial disease.

Illustrative of the foregoing statement, I should like to cite a few skeleton cases in which phenolsulfonephthalein has been of service: Case 1. Male; age 25. History of measles and typhoid. Complains of headache, insomnia and gradual loss of weight over a period of several months, together with frequent and painful urination beginning about three months ago and gradually increasing in severity until the present time. Denies venereal history but states that he had some trouble with his urine after measles, five years ago. Urine shows abundant macroscopic pus and microscopic blood cells, B.P. 140 mm. The headache, insomnia and blood pressure with history of urinary trouble after measles suggest the possibility of nephritis antedating an obvious cystitis. Phenolsulfonephthalein test, however, showed 85 per cent. elimination for the two hours. Following a period of bladder washing, the urine cleared up, symptoms disappeared and neither albumen nor casts have ever been found.

Case 2. Male; age 64. Had undergone prostatectomy two months previously, at which time the urine showed a trace of albumen and a few casts in a 24-hour secretion of 2000 cc. Just prior to operation phthalein test showed 52 per cent. elimination. At the present time complains of vertigo, violent headache, foul breath and vomiting. Is unable to walk without assistance. Talks with difficulty. States that urine has been very scanty for the past twenty-four

hours. B.P. 165 mm. The symptoms are urgent enough to suggest impending coma. Phenolsulfonephthalein test, however, shows 50 per cent. elimination, only slightly less than at the time of operation. This suggests that we look further for the cause of present complaints. We learn from a relative that his diet regimen has been far from suitable and from him that constipation has been marked for some days. Signs and symptoms both promptly disappeared after free purgation and two days rest in bed, which suggests that we were dealing with intestinal retention rather than nephritis.

Case 3. F.; age 14. A case of generalized edema. Liver apparently normal; pulse, 120, slightly irregular. Presystolic murmur transmitted to axilla. Apex, 6th, interspace  $\frac{1}{2}$  in outside nipple line. Superficial dullness somewhat increased to the left. Urine scanty, showing albumen five parts to the 1,000 and a few granular casts. The question here arises as to whether the kidney lesion is the predominant or secondary factor and there is scarcely time for prolonged observation. Phenolsulfonephthalein test administered with only 8 per cent. elimination for two hours, showing clearly that the amount of kidney destruction was very extensive, a fact confirmed a week later at autopsy.

This drug lends itself moreover, not only in differential diagnosis but for prognosis as well, in interstitial nephritis, particularly. As the disease progresses the percentage of elimination decreases. Its percentage of elimination, if we may judge from our own small series of cases, parallels with the urea curve, showing maximum power for the elimination of urea. If this is true, dietary regulation may be readily controlled by phenolsulfonephthalein tests.

I realize that I have covered this field in a most meager fashion, but better literature on the same subject is abundant, leav-

ing for this paper the simple mission of urging more frequent use of kidney tests, and particularly phenolsulfonephthalein in spheres of general medicine.

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#### FUNCTIONAL TESTS OF THE LIVER\*

BY PHILIP HILLKOWITZ, M. D.,  
 DENVER.

This part of the symposium was originally assigned to the late Dr. Henry S. Denison, whom an unkind fate has so suddenly removed from our midst. I hope you will pardon me if in the midst of a scientific discussion I seize this opportunity to dwell for a moment on the great loss this Society has sustained in the untimely death of this promising young scientist. Endowed by fortune with resources that freed him from the cares attending the struggle for existence, he utilized his time, not in idle amusement, but in the zealous pursuit of knowledge in order to benefit his fellowmen. The colleagues who had the privilege of hearing his valuable paper on "Hormones" at the last meeting of the State Medical Society or who have read it in our official publication will readily appreciate the worth of his contributions to our medical community. Only those who have watched him spend hours and days in our medical library or in his laboratory, studiously collecting data and facts relating to

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medical subjects are aware of the patient's perseverance and scholarly studiousness of the man in his quest of knowledge and in his painstaking research work.

This year's proceedings are, therefore, unfortunately deprived of the exhaustive study that he would have brought on this subject shedding an illuminating light on this portion of the symposium.

Stepping into the breach at the eleventh hour at the kind invitation of the Program Committee, the essayist craves the kind indulgence of his hearers for the poverty of data that he can furnish for the last item of this important topic.

Yet what, after all, can one say about functional tests of the liver? This organ of mystery to which divers and sundry duties are ascribed has ever baffled the searching probe of the physiologist. We have easy access to the heart by the usual diagnostic methods of inspection, palpation, percussion and auscultation as well as by those beautiful graphic pulse tracings and cardiograms. So, too, may we easily ascertain the condition of the lungs. The kidneys, for centuries, have been studied through the urine. But how can we get at the liver, when we do not even know accurately its functions. True, much has been learned about it, thanks to patient research on man and animals. Far more, however, is yet to be solved.

Aside from the fact that we cannot directly examine the secretion of this organ, which is poured out in the intestine and partially reabsorbed, we also labor under the handicap that the liver, like other organs, possesses sufficient reserve substance to enable it to perform its functions, even after the loss of a great deal of its parenchyma, giving no indication of a pathologic condition in the early stage of disease. Furthermore, some of its functions, like the formation of urea, may be taken up vicariously by other agencies.

It is, therefore, impossible in our pres-

ent state of knowledge to diagnose a definite anatomic alteration or a particular syndrome from any of the functional tests.

This does not mean that we are entirely at sea in the diagnosis of liver affections. In spite of the difficulties presented, let us see what cues are available when we find or have reason to suspect a derangement of the functions of the liver. Altered function of this organ takes place as a result of intoxications as a by-effect in the course of infectious diseases, as a result of occlusion of the biliary passages from any cause or by the invasion of microorganisms and of malignant neoplasms.

When we speak of liver function we take into account quite a category of duties that this organ has to perform. We shall only mention the principal ones. These are: (1) the formation of the bile, which helps in the digestion and absorption of the fats and in the removal of waste metabolic products; (2) the formation of glycogen for the purpose of storing up the carbohydrates ingested and supplying them to the body as fuel for energy at such time and in such amounts as needed; (3) the formation of urea, which is the chief end-products of protein metabolism.

Our functional tests must, therefore, aim to ascertain whether these duties are performed properly. In this investigation we have practically nothing else to work on but the urine. Here is where we look for alterations in the three above-mentioned functions.

For derangements in the secretion of the bile we look for the biliary pigments, bilirubin or its oxidation products biliverdin, bilifuscin and biliprasin, for the biliary acids, i. e., glycocholic and taurocholic acids, and for urobilin and its predecessor, urobilinogen.

The biliary pigments are found in cases of icterus caused by an impediment to the flow of the bile into the intestine, be this due to a catarrh of the ducts, to obstruc-



tion by calculus or parasites, to compression by tumors of the liver, gall bladder or pancreas. Bilirubin is formed in the liver from blood pigment and is eliminated with the bile into the small intestine, where it is changed to urobilin. The latter is partly reabsorbed and excreted in the urine as urochrome or so called "normal urobilin."

Icteric urine is often recognized by its color, which ranges from a yellowish red or brown to a greenish black. Many methods are in vogue to recognize its presence in the urine by chemical examination. I shall only cite a few of these tests:

*Gmelin's Test.*—The filtered urine is allowed to flow down carefully on a layer of nitric acid containing a trace of nitrous acid. If biliary acids are present there is a play of colors at the ring formed by the junction of the two fluids from greenish blue through violet red to yellow. The different colors represent the stages of oxidation of bilirubin when it comes in contact with the acid.

*Trousseau's, or Smith's Test.*—Five to 10 cc. of urine are allowed to flow down on a layer of 2 or 3 cc. of a 1:10 dilution of tincture of iodine. An emerald ring is formed at the junction of the fluids if bilirubin is present.

*Huppert-Salkowsky Method.*—After rendering the urine alkaline with a few drops of sodium carbonate solution, calcium chloride (1 to 10) is added, drop by drop, until the fluid above the precipitate shows the normal urine color. Wash the precipitate on a filter, place in test tube with alcohol and dissolve by adding HCl. If the clear solution contains bile pigment, boiling will turn it green, then blue, violet and red. If bilirubin is present in sufficient amount it may be detected microscopically by the brown needles resembling those of hematin, which crystallize out on heating the urine with HCl. and letting it stand in the cold.

The presence of biliary acids has the

same diagnostic significance as that of bilirubin. They may be detected by the method of Hoppe-Seyler (v. Sahli's Diagnostic Methods, p. 578).

Urobilin and urobilinogen (the latter being converted into the former by the action of light) have been found in a number of diseases that have no relation to the liver, but it is of frequent occurrence in cirrhosis. The best method of detection is by the spectroscope. When present, the entire blue end of the spectrum is absorbed. It may also be demonstrated chemically by rendering the urine strongly alkaline with ammonia, filtering and adding a few drops of a 10 per cent solution of zinc chloride. A beautiful green fluorescence results in its presence.

For urobilinogen the para-di-methyl amido benzaldehyd test is employed. Twenty grams of this substance are rubbed up in a mortar with 100 cc. conc HCl, more acid is added until the volume is 500 cc. It is now made up with water to 1,000 cc.; two drops of this mixture are added to the urine. If urobilinogen is present it becomes dark red in color and the spectrum shows a band in the orange yellow between D and E.

The second route for attacking the problem of determining altered liver function is to test its glycogenic function. For this purpose the patient gets 100 grams of levulose in his diet usually in a solution of 500 cc. of water or milk. Under normal conditions the entire amount of the sugar is converted into glycogen and none appears in the urine. In marked alterations of the liver function more or less of the levulose is eliminated by the kidneys — alimentary levulosuria. For the next six hours after the administration of the sugar the urine is collected at two-hour intervals and tested as follows by Selivanoff's method: A few crystals are added to the urine, together with a small quantity of hydrochloric acid. On boiling, a dirty brown precipitate is formed, if levulose is present. The precipi-

tate is redissolved on the addition of alcohol.

The diminished capacity of converting the levulose into glycogen is observed in over 90 per cent of the cases of cirrhosis. It also occurs in obstruction of the biliary passage and occasionally in infectious diseases and intoxications where there are no demonstrable lesion in the liver.

Lastly we may test the function of the liver as regards its formation of urea and other end-products of protein metabolism. The exact rôle the liver plays in the katabolism of the albumins has not yet been worked out. The greater portion of the nitrogen eliminated appears in the form of urea as a result of the action of the liver on the more complex split products of albumen. The urine also contains in small amounts other nitrogenous end-products, such as the purin bodies, amino-acids, polypeptids and nitrogen in the form of inorganic combinations.

If we examine the distribution of the nitrogen among these various combinations we find that they differ from the normal in diseases of the liver. Thus where there is degeneration of the liver parenchyma there is an increased output of the amino-acid nitrogen and of the peptid nitrogen. Tests have also been made by the administration of weighed amounts of amino-acids and watching the extent of elimination by the kidneys.

I may say in passing that the testing of liver function by the nitrogen output is, of course, beyond the scope of the general practitioner, as it takes up much time, and can only be carried out in a chemical laboratory equipped with the apparatus for the determination of nitrogen.

A great deal of research work in the field has been done recently in Von Noorden's clinic by Falk and Saxe. Their conclusions briefly summarized are as follows:

Increased excretion of urobilin begins to take place when the injury to the liver is still of a mild nature and where no other

disturbance is recognizable. Thus in passive congestion we only note increased urobilin, but seldom levulosuria and never any deviation in the nitrogen elimination. In other words, the first effect of injury to the organs hits the secretion of the bile.

When the nitrogen output begins to show irregularity there has already taken place serious injury to the liver substance, for, as was previously mentioned, this organ has an enormous reserve capacity and disturbances will not be manifested until this reserve is exhausted. Hence, if in a given case we find increased urobilin, alimentary levulosuria and, lastly, a derangement of the nitrogen elimination, we may safely conclude that we are dealing with a serious disease of the liver, such as cirrhosis. Often, in fact, when the clinical signs are still vague and unsatisfactory the functional tests will give us the clue to the existence of cirrhosis.

It is to be hoped that the investigations now so diligently carried on in this field will in the near future give us more exact and simple methods to aid us in the diagnosis of the diseases of the liver.

#### DISCUSSION OPENED.

**Dr. John Inglis, Denver:** I will say a few words on Doctor Giffin's paper on the functional tests of the kidney. To my mind, Doctor Giffin has undoubtedly given the best of these tests. The general practitioner is being constantly overwhelmed with the great number and variety of tests. Nevertheless, it is the duty of every physician today to keep himself abreast of what is being done along these lines. They are simple enough if they are followed up. Every physician should be familiar with at least one test each for the stomach, liver and kidneys. Cryoscopy is a word we hear a great deal of today, meaning of course, the determination of the freezing point. I fail to see where cryoscopy gives us any definite information on the functional activity of the kidneys that is not to be found by determining the specific gravity, because the real principle of cryoscopy is determining the molecular concentration of urine, which is practically the same as specific gravity. The other test that is most commonly used is the phloridzin which produces a temporary glycosuria. It is not, however, as satisfactory a test as the phthalein test. Another neat test that can sometimes be used and save catheterizing the

ureters is the giving of methaline blue and, with the cystoscope, observe if both kidneys are secreting.

The importance of these tests is, of course, more in diagnoses and in prognoses than elsewhere. Doctor Giffin asked me to relate a case or two in point.

I want to say first that the advantages of this phthalien test are these: In the first place, it is harmless; it is non-toxic; it is non-irritating. I recall only one case after an injection of phenol-phthalein (pronounced fe-nol-tha'-le-in) where the patient complained of pain, and she was a hysterical person, and I was not very sure whether she was in much pain or not.

The advantages of a functional test of the kidneys: Last week I was called in with another physician to see a case of what seemed to be an undoubted case of parenchymatous degeneration of the kidneys. The patient wanted to make a trip back East to visit some friends before she died—she knew she was going to die. The case was hopeless. We decided to test the kidneys; gave an injection, and it was thirty-five minutes before we got the phthalien test in the urine. That case is absolutely hopeless and has probably only a short time to live, and the indications are that even a trip of that kind would be disastrous.

Another case that was of very great interest to me was a case of diabetes, apparently, following labor. Doctor Sewall and Doctor Hall both saw this case with me. I found the sugar in the urine. The point to determine was whether this was a distinct case of diabetes, or what was the trouble. A functional test of the kidneys showed the kidneys to be functioning normally. A few days after that the patient began to complain of pain at the pit of the stomach. Inside of five days there was a distinct palpable tumor over the head of the pancreas. Another test of the kidneys still showed that the kidneys were functioning normally. The question was whether to operate on that case or not. When Doctor Sewall first saw the case we felt very sure that it ought to be operated on, but keeping a test of the kidney function I felt that the case could be run along with a special plan of treatment and the functioning of the kidneys being normal led me to believe that the case was probably a strict pancreatic obstruction, producing transient sugar. The after treatment of the case showed this to be a fact.

Another point; you have often seen these cases (for instance, of chronic intestinal nephritis). Sometimes they are hard to distinguish from diabetes insipidus. You do not get the casts; you do not get the albumen, but they are passing large amounts of pale urine. In intestinal nephritis you will find from the start a lack of normal functioning of the kidneys. One injection of the Phthalien test will show whether the kidney is functioning normally. In the diabetes insipidus it will; in the intestinal nephritis it will not be. There are a great many cases where it can be used and used to advantage, especially for diagnosis and prognosis.

**Dr. Saling Simon:** With reference to Doctor Hillkowitz's paper, De Sandro has recently called attention to a very simple test for the liver functioning, in the administration of potassium guaiacol sulphonate (thiocol). Patient takes this drug for several days, the drug or its separate ingredients cannot be recovered from the urine, whereas if the liver does not functionate properly, as in cirrhosis, the drug is recovered from the urine. The test consists in adding a solution of ferric chloride to the urine; in a normal individual, after the ingestion of thiocol, the urine turns green, an aqueous solution of thiocol turns violet upon adding the solution of ferric chloride.

**Dr. J. N. Hall, Denver:** As to tests for the heart capacity, I think one of the most striking things about that is that one can so often estimate, and I think particularly if he has had a fair experience with hearts, pretty accurately what a heart will do by observation under ordinary exertion, but when it comes to severe exertion the suddenness with which symptoms appear in those who have not been known to have anything wrong is rather startling. I think some of those who went to Los Angeles at the meeting of the American Medical Association a year or two ago will remember how vividly that was shown at the Grand Canyon, which is worth speaking of before a medical society, because of the fact that the patients were all physicians, and there were a good many of them. As many of you know, there were perhaps a thousand physicians there on one day, and there were not nearly enough horses to take them down to the cañon, while hundreds of them wanted to go, and as a result many walked down. After dark came it was found necessary to send a train of horses and mules down to bring up the doctors who were laid up alongside of the trail from temporary overstrain of the heart. I saw something like a dozen of them in a casual way, in passing them on the trail, one or two of whom I knew. Of all these suffering from overstrain of the heart, there was not one to my knowledge that came from the West; every one was from the flat country to the east. I thought at first it might have been that the hearts in the West are in better training in general. They were not old men at all who were in trouble, for there were plenty of men in their 40s who were laid out. I think, as I have thought it over since then, that probably the hearts that gave out belonged to individuals not necessarily who were not in reasonable training but who had not appreciated what they were going into. Plenty of men, especially among those who have always lived in a flat country, do not know what it means to go down into a cañon about a mile and then walk up it again. That certainly is a gruelling test for the heart, and the men who fell down were probably men who had never had sufficient experience in mountain climbing, and especially in mountain climbing which starts at an elevation of 7,000 feet above sea level. They were men who did not appreciate what that meant. Men who had been in the habit of going about the mountains in the Southwest, and in the higher mountains



which we have here, as compared with the lesser ones in the East, knew how much of a test they were going into and would not go into it too far. They did not start out, as they were familiar with Western mountains, and walk down to the river and then for the whole mile walk directly up into the air after they got through. I think probably a knowledge of the conditions had more to do with saving doctors from having trouble (that is, the Western ones who were acquainted with it) than the fact of his heart being in better order. I have been very much pleased with all the papers.

**Dr. H. C. Moses, Colorado Springs:** I believe the phthalein test to be particularly reliable and that it is a valuable adjunct to one's clinical judgment as regards the matter of prognosis; indeed, often more valuable than that judgment.

One case that I recall in particular was that of a rather aged lady, apparently in the beginning of uraemic coma. Another physician and myself gave a positively gloomy prognosis, but the phthalein test indicated otherwise. This was several months ago, and the patient is at the present time doing very nicely.

I also found it valuable in a case of pregnancy, complicated with what appeared to be a rather severe grade of nephritis, the urine showing a high albumen percentage with many casts. It was the intention to interrupt pregnancy on account of the nephritis, but owing to a favorable phthalein test the case was permitted to go to term without any untoward results.

Another class of cases in which I believe this test to be of value is that of the cardiac valvular diseases with broken compensation where it is often a question as to how much of the oedema is due to the cardiac condition and how much to the deranged kidney function. I believe that by this test it is usually possible to determine fairly accurately how much of such oedema is of renal origin.

The surgeon will also find this test of value as an aid in the selection of operative cases and also in the selection of the most favorable time for operation in those cases where more or less renal impairment is known to exist.

In the Journal of the A. M. A. someone has recently called attention to the fact that in some specimens of urine there is a peculiar yellowish cast which causes no little difficulty in making a comparison with the control solution, and that by simply placing a piece of yellow glass over the aperture for the transmission of the light, obviates this difficulty very nicely.

**Dr. L. P. Barbour, Rocky Ford:** I understood one essayist to say that these chemical tests should be done in a chemical laboratory well equipped; for those who have that laboratory, or if they are close to town, that will be all right, but for us country doctors in country towns, lots of work will not be done if we wait for the well-equipped chemical laboratory, and I think that the well-equipped chemical laboratory is not necessary. The country doctor in

his work can do most of these tests if he will only think so and go at it. He cannot be lazy. He must not be mentally lazy if he is a practicing physician, but if he has the common sense sufficient to practice medicine, and if he gets side-tracked, as I find I myself do once in a while; if he neglects to keep up on these things, he should secure a specimen that he wants examined and should go with it to some good chemist—some man who is up in these tests—and see him go through the tests, and then he can do the same thing with a comparatively simple equipment. This is one point I want to make: That men in the country towns can do these things if they think so and go at it.

**Dr. Oliver Lyons, Denver:** The principal objection to most of the functional tests of the kidney is the arbitrary standard on which they are based. The real value of all tests are not to determine whether we can successfully do a nephrectomy, for we have no tests in which the renal functions can be separated from other organs of the body or what combination of circumstances may change entirely that function in a few days. It does not necessarily mean that a patient will live or die from any operation wholly on the renal function.

Functional tests are used in my experience for diagnostic purposes, and even here we should not expect too high a degree of accuracy from their use and must be prepared to rely only upon broad variations from the normal as evidence of disease. For instance, we have a bilateral lesion of the kidney and wish to know what procedure to follow. It would be an extremely important thing to know the functional capacity of the kidneys so as to be able to select the proper line of treatment. Or in cases of hematuria, which may be due to a nephritis, hypernephroma tumor, tuberculosis, or it may be an essential hematuria.

The use of one of these tests combined with urethral catheterization will give you information that would be rather difficult to obtain by any other means, namely, on the diseased side we find a delayed appearance of the drug with a diminished total output, as compared to its healthy neighbor. The dye tests are about upon a par, if we consider only the time elimination, but remember, this is only one phase of the test. The most important thing to know is the total elimination. Probably the phenol-sulpho-nephthaline test is the most sensitive and reliable one we have at the present time.

**Dr. Clay Giffin, Boulder:** Laboratory work may be done anywhere proper equipment and sufficient time are available. The average physician's laboratory does not afford the apparatus necessary for reliable and accurate urea determinations, and moreover there are but few who are willing to devote the time necessary for such computations. It is for these reasons that I urge the phenolsulfone-phthalein method. It is a test which requires but little time and a very small amount of apparatus, and therefore should be in the hands of the general practitioner. I propose a simple test for a complicated one.

**Dr. Philip Hillkowitz, Denver:** I am greatly

indebted to Doctor Simon for calling attention to a test of the liver, with which I am not familiar. As to what Doctor Barbour says, I heartily agree with him as to the necessity for every practitioner doing as much of his own laboratory work as possible. In my paper, however, I referred to the determination of nitrogen, which requires a well-equipped laboratory, because the process will take four hours, and I can see the embarrassment that the country physician will be in if he is called away in the meantime to a confinement case.

If I may be allowed to invade the domain of my colleagues in this symposium, I would say a word about some of the tests which they have mentioned. First, as regards the pronunciation of phenolsulfonephthalein. The essayist, in passing, mentioned the variability in the pronunciation of that word. In the interests of purity in English may I state that phenolsulfonephthalëin is the way it should be pronounced. Its congener, phenol-phthalëin, has been used for many years in the chemical laboratories, and this is the standard pronunciation.

As regards cryoscopy, I beg to remark that it does not necessarily run parallel with the specific gravity. The specific gravity of a liquid will increase with the amount of solids dissolved in it that are heavier than water, but the gases and other substances of a lower specific gravity will diminish it. In cryoscopy we determine the molecular concentration which is equivalent to the osmotic pressure and need not be coincident with the density of the dissolved solids. However, as the doctor remarked, these determinations are more of theoretical interest, and neither of these tests can very well be carried on by the general practitioner. As regards simplifying tests, I may say a word about determining the exact percentage of phenolsulfonephthalein in urine. Those engaged in genito-urinary surgery use a regular colorimeter for the purpose. There is one known as Hollige's colorimeter, which has recently been devised by Aubeurreth, costing only about \$25, which gives very accurate results.

If a regular colorimeter be not at hand, standard solutions of strengths varying from 5 to 50 per cent of phenolsulfonephthalein can be prepared, as suggested by Cabot, and used as comparison tubes, with one containing the urine. This method gives fairly accurate results, the limit of error being only 5 per cent.

**ANY MEMBER DESIROUS OF PREPARING A PAPER FOR THE GLENWOOD SPRINGS MEETING OF THE SOCIETY, OCTOBER 7, 8 AND 9, SHOULD COMMUNICATE AT ONCE WITH DR. W. T. H. BAKER, PUEBLO, CHAIRMAN OF THE COMMITTEE ON SCIENTIFIC WORK.**

A profession has for its prime object the service it can render to humanity; reward or financial gain should be a subordinate consideration. The practice of medicine is a profession. In choosing this profession an individual assumes an obligation to conduct himself in accord with its ideals.—Principles of Ethics, A. M. A.

## ANAPHYLAXIS.

ROSS C. WHITMAN, M.D.,  
DENVER.

This paper is too long at the best. To avoid as much of this length as possible I have omitted the customary historical note.

It will, I think, conduce to a clearer comprehension of the subject if the usual order of discussion is altered so as to cover the following points, in the order named:

1. Definition of terms.
2. Postmortem findings.
3. Mechanism of the reaction and relation to immunity.
4. Physiological action of the anaphylactic poison.
5. Symptoms of anaphylaxis in various animals and in man.
6. Anaphylactic diseases of man.
7. Prophylaxis.

1. If a guinea pig is given, in some manner other than per os, a small dose of some foreign proteid, such as egg albumen, horse or beef serum, etc., no symptoms of consequence are produced. But after the lapse of a certain interval, or incubation period, varying from seven or eight days to two or three weeks, a second, and even very minute dose of the same proteid (but not a different one) often causes the rapid death of the animal; or, if the second dose is sublethal, more or less sickness, from which the animal may recover.

The reaction is very strictly specific, i. e., the same proteid must be used for both the sensitizing and reaction producing doses. Weichardt (49) cites the case of a laboratory assistant who is sensitive to Witte's peptone. A cautious sniff at a bottle of the powder causes sneezing, and more or less marked congestion of the nasal mucosa, with the symptoms of hay fever. Horse-hair peptone and silk peptone do not cause

\*Read at the annual meeting of The Colorado State Medical Society September 24, 25, 26, 1912.

the reaction. This strict specificity has made it possible to devise methods based on the anaphylactic reaction, for the recognition of certain food adulterations, such as the presence of horse flesh in sausage, and for the determination of the source of blood in blood stains, etc. Certain apparent exceptions to this law of specificity will be mentioned later in dealing with the mechanism of the reaction.

This phenomenon in its varying degrees of intensity is known as anaphylaxis, or allergy, or hypersusceptibility. Since, however, it is now generally believed that the phenomena of hypersusceptibility to certain drugs (calomel, opium, atropin, coffee, alcohol, etc.) which have no antigenic properties, are not instances of true anaphylaxis, it is proposed by some to confine the term "hypersusceptibility" to such aberrant drug action. (By an antigen, we understand, of course, any substance capable of exciting the body to a reaction of immunity. Broadly speaking, these are the proteids).

If the blood serum of an animal which has been "sensitized" or rendered anaphylactic to a given antigen, is injected into a second (normal) animal, the latter also becomes anaphylactic to the same antigen. This is called passive anaphylaxis, and is analogous to the passive immunity conferred by injecting serum from an animal highly immunized to diphtheria, into a human being for preventive or curative purposes.

When a sensitized animal has been given a sublethal dose of the protein to which it is sensitive and recovers, it is, for a short time (six to twelve hours, approximately) no longer sensitive to doses of the antigen. During this period large doses of the antigen can be given with impunity. This condition is called antianaphylaxis. From the standpoint of practical therapeutics this fact is of the greatest importance, since it affords an opening—at present almost the

only opening—through which the problem of preventing future deaths from anaphylaxis may be attacked without relinquishing the use of protective and curative sera.

2. *Postmortem Findings.* These are stated by practically all observers as follows:

1. Marked distention and rigidity of the lungs is the most striking and constant finding and is widely used as a criterion of anaphylactic death.

2. Spasm of the smooth muscle of the bronchi, of sufficient intensity to throw the mucosa in folds and partly, at least, to cause the expiratory dyspnoea characteristic of the condition.

3. Hyalin thrombosis of the lung vessels, sometimes leading to infarct formation and aseptic pneumonia.

4. Reduced coagulability of the blood. This is due to the absorption of complement (fibrin ferment) to be discussed later.

5. A hemorrhagic inflammation of the small intestine was observed in dogs by Schittenhelm and Weichardt (38), who regard it as due to a reversal of the natural process by which proteids are absorbed from the intestine.

3. *Mechanism of the Reaction.* Here we enter on the most difficult phase of the subject, about which the hottest dispute centers. Great progress has unquestionably been made in the past two or three years, and to this advance the largest contributors have been Friedberger and his associates (13-24). His results, and the conclusions derived therefrom, may be stated as follows, no attempt being made to separate individual contributions listed in the subjoined bibliography:

The entering wedge was afforded by the observation that the specific precipitate, formed by the interaction of horse serum and a specific precipitin (serum of an animal immunized to horse serum) would, if treated *in vitro* with fresh guinea pig serum ("complement") yield a toxic substance which, in exceedingly small doses,



causes acute death, with the symptoms and postmortem findings of anaphylaxis. This poison Friedberger calls for convenience "anaphylatoxin," but he is careful to state that the term should not be taken to connote a definite poisonous body. It designates a poisonous property of the serum in which it is found, not a substance. 0.1 mg. of the dried specific precipitate may yield a fatal dose of the poison, and this without the former's appreciably losing in weight. The poison, therefore, is the most powerful known, far surpassing in lethal qualities the most powerful inorganic and organic poisons and bacterial toxins heretofore discovered. Similar poisons have been produced in the same manner from a great variety of antigenic substances, including many bacteria. The following may be mentioned: From *B. typhosus*, V. Mitchnikovi, *B. prodigiosus*, *B. tuberculosis* by Friedberger & Vallardi (24) and, by Friedberger (18), *B. tuberculosis*, by Wahl (48), *B. typhosus*, *B. prodigiosus*, *Staphylococcus*, *B. anthracis*, *B. diphtheriae*, *B. tuberculosis*, by Aronson (2), *Meningococcus*, by Roehnke (6). No one has succeeded in obtaining the poison from *streptococcus*. The poison may also be obtained from various sources by the action of complement alone, or, at least, without the aid of specific immune bodies. The influence of small amounts of normal immune body, analogous to the normal hemolysin for sheep cells found in human blood serum, and which is made use of in certain modifications of the Wassermann reaction, has not been fully excluded in these cases, however, and Friedberger rightly suggests (14) that these should be taken into account. He asserts that symptoms of anaphylaxis can be produced at the time of the initial sensitizing dose, provided the latter be made large enough, by the aid of these normal immune substances.

On the basis of these observations Fried-

berger early laid down the following now widely accepted theory of anaphylaxis. (15 and elsewhere.)

The first or sensitizing dose of foreign proteid causes the formation of specific antibodies. When a second dose of the same proteid is given, (at the end of a suitable incubation period,) it unites with the new formed immune body, and this antigen-immune-body complex in turn fixes the complement normally present. The complement, acting ferment wise on the antigen "sensitized" by the immune body, breaks it up with almost explosive violence, and in doing so liberates bodies having a simpler constitution, and endowed with exceedingly toxic properties.

A multitude of facts going to support this theory in its broad lines has rapidly accumulated. Without attempting to name them in special order (some, indeed, antedate the theory itself,) the following are the most important.

1. Witte's peptone, which is a mixture of acid and alkaline albuminates, albumoses, a small amount of peptone, and of amino acids, causes death with symptoms of anaphylaxis, when injected parenterally into a fresh or normal animal. (Hirschfelder 29.) Furthermore, animals sensitized to horse serum may be rendered antianaphylactic by a sublethal injection of peptone and dogs rendered antianaphylactic by means of horse serum are insusceptible to peptone (Biedl and Kraus 5.) Manwaring (34) and Loewit (33) were able to confirm the first part of this observation, but not the second part.

2. Prolonged digestion of proteid by stomach and pancreatic ferments yields an anaphylactic poison. The longer the digestion is continued, and the more formol titratable amide nitrogen is present, the more toxic the product becomes. (Hartoch and Ssirensky 25, and Schittenhelm and Weichardt 38.) Similarly Livierato (31 and 32) found that, although even 1.0 cc.

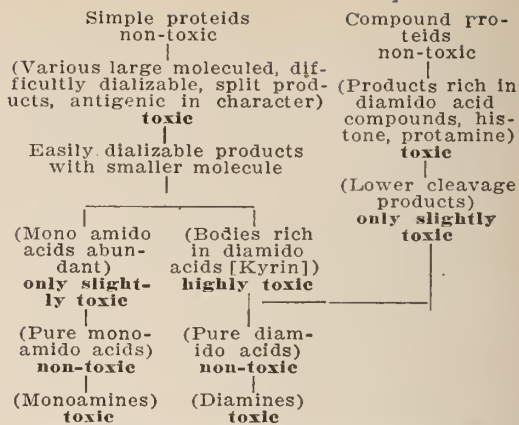
of normal gastric juice is harmless when injected subdurally in rabbits, the stomach juice from cases of cancer of the stomach (but not of other organs) is markedly toxic in doses of 0.1 cc. by reason of the decomposition products present. If the animal is sensitized with a cancer extract, 0.05 cc. stomach contents may suffice to produce typical shock.

3. Hartoek and Ssirensky, (25) and Doerr and Moldovan (10), find that there is a definite parallelism between the amount of complement present in the blood, and the development of shock. When no complement is available, shock does not occur. It is essential to the reaction.

4. The strongest support is brought by Schittenhelm and Weichardt (39.) Studying the toxicity of various pure peptids, they find that compounds rich in the monoamide acids are nontoxic or nearly so. Here are included silk and horse hair peptone. On the other hand compounds containing a high proportion of the diamido acids and protamines are highly toxic and produce in normal animals typical symptoms of anaphylaxis. Here are included Witte's peptone and various pure polypeptids, klupein, kyrim, histone, etc. It would appear that the relatively greater toxicity of Witte's peptone as compared with horsehair, and silk peptone, may explain the case reported by Weichardt himself, and already mentioned, in which an assistant was able to distinguish these substances by means of the reaction excited by Witte's peptone. The successive stages of proteid decomposition may yield products alternately toxic and non-toxic.

Toxic compounds may lose their toxicity by being broken up into simpler complexes. They may also become non-toxic on being synthesized into larger groups, e. g. histone is toxic, but its compound nuclein is practically inert.

They present the following scheme of the various cleavage products.



The body thus presumably rids itself of the toxic substances either by further decomposing them, by synthesizing them (and thus perhaps rendering them biologically completely homologous,) or by eliminating them. Thus Pfeiffer (35) and others have found that the urine of animals recovering from anaphylactic shock is highly toxic, and causes symptoms of anaphylaxis when injected into normal animals.

It should be mentioned that Friedberger's theory is not by any means universally accepted. Biedl and Kraus (5) believe that the poisons obtained by Friedberger are not the cause of anaphylaxis, and that their effect differs sufficiently from the phenomenon of anaphylaxis to justify the complete separation of the two. They believe that the anaphylactic poison is not derived from the antigen but from the tissues of the sensitive animal. Schittenhelm and Weichardt (39) also believe that some at least of the toxic substances may originate from the tissues of the host, under the influence of ferments present in bacteria, as well as from the bacterial cell, under the influence of immune bodies and complement elaborated by the host. Doerr (9) believes that the anaphylactic process depends simply on physical changes in the blood of the sensitive animal, e. g. reduction in amount of complement, leucopenia, reduction of blood platelets. He finds that fresh guinea pig serum

extracted with kaolin, and various colloid substances which have no antigenic properties, are capable of producing anaphylactic phenomena. Abderhalden (1) has also insisted that this and other problems have been viewed too exclusively from the standpoint of pure chemistry, and inclines to the view that these are, in great measure, phenomena of disturbed osmotic equilibrium in colloid menstrua and belong to the domain of physical chemistry, rather than to that of pure chemistry. Waele (47) believes that amino acids, preformed in the antigen or split off from it, act as a "tween body," first fixing the complement (the essential feature of the process), this amino acid-complement complex then acting as a tween body between the organism and antigen when the animal is injected. The essential pathological change is the thrombosis in the lungs, also brought about by the same "tween body."

This seems to be an appropriate place to call attention to certain facts regarding the "pathogenesis" of the anaphylactic state which are of great practical importance. Vaughn, Cumming and Glumphy (45) and others have observed that animals can be sensitized to egg white by the enteral route. It is only necessary that a certain very small amount of the antigen should get through the intestinal mucosa without first being deprived of its essential properties as an alien proteid. In the human this abnormal mode of absorption seems to depend on some functional or organic defect of the intestinal epithelium. It is important as explaining the cases of food idiosyncrasy with which we are all familiar. Laroehe, Richet fils, and Saint Girous (30) observed that 70% of the guinea pigs fed on raw cow's milk become moderately anaphylactic to a subsequent injection.

Schenk (37) found that sensitized male guinea pigs beget young twenty-five out of forty-five of whom are sensitive. Fe-

males sensitized before pregnancy begins have young three out of five of whom are sensitive. When both parents were sensitized before the beginning of pregnancy four out of seven young were sensitive. When the mothers are sensitized during pregnancy all the young are sensitive. This observation, besides its purely practical bearing, is important as indicating how intimately the anaphylactic state is bound up with the life of the cell. Transmission of sensitiveness, by the father at least, seems to constitute an indisputable instance of the hereditary transmission of an acquired characteristic, provided it can be shown that this sensitiveness persists.

4. *Relation of Anaphylaxis to Immunity.* All writers have stated that the existence of immunity is inseparable from the existence of anaphylaxis. Without anaphylaxis, there can be no immunity. What this relation must be is apparent enough, but it remained for Friedberger (14) to state the proposition in unequivocal terms. In the case of enteral digestion the proteids are absorbed, under normal conditions, only after having been so altered as to lose their biologic entity. They cease to be foreign proteid (i.e., beef, pork, chicken proteid, etc.,) and before they enter the circulation they become human proteid. In the case of parenteral digestion however, although products are formed which are perhaps, chemically identical with those formed in the intestine, these are brought into contact with the body tissues before they have lost their biologic peculiarities as beef, etc. Hence their toxicity. If the first or sensitizing parenteral dose of a foreign proteid is large enough, it may cause anaphylaxis through decomposition by the (in most cases small, amount of normal amboceptor present. In a sensitized animal enough specific immune body is present to produce with startling rapidity (with the aid of the complement) a fatal dose of the



toxin from a sufficient second dose of the antigen. Death may take place within a few seconds. But when the amount of antigen is small, not enough toxin is produced at any one moment to cause fatal symptoms.

No cumulative action occurs, since the organism is constantly busy in eliminating or further altering the poison as rapidly as it is formed. Moreover, a sublethal dose, by absorbing complement (or, according to Friedberger the specific immune-body), renders the animal anaphylactic, and permits the further injection of antigen in any amount, and this now serves to stimulate the formation of additional immune substances. Friedberger himself believes that all the symptoms of an infection represent manifestations of anaphylaxis of varying intensity, depending on the rate of production of the poison rather than on specific poisons produced by the bacteria themselves.

4. *Physiological Action of the Poison.* Schultz (42) finds that normal smooth muscle fibres are stimulated to contract by strong neutral solutions of proteid. Muscle from sensitized animals gives this reaction in an exaggerated degree, which manifests itself before the living animal can be made to react. Atropine and adrenalin, which have been recommended in the treatment of anaphylactic shock, inhibit the muscle reaction only when given in distinctly toxic doses. Schürer and Strasmann (41) find that anaphylactic shock still occurs in animals whose fore brains have been removed. Section of the cervical cord and both vagi also failed to inhibit shock. The reaction therefore is peripheral, and does not depend on the presence of sessile receptors for the toxin, in the brain.

5. *Symptoms.* Broadly speaking, the same species reacts alike, regardless of the antigen employed. But different species react differently to the same antigen, and also vary in their susceptibility to the ana-

phylactic poison. Hektoen (28) gives the following description:

1. The guinea pig is the most susceptible of the laboratory animals. Within a few seconds after intravenous reinjection, but somewhat more slowly after subcutaneous or intraperitoneal administration of the antigen, the animal begins to scratch its nose and body, becomes restless, chokes, there are convulsive movements about the mouth and throat, retching, involuntary discharge of urine and feces, then convulsions, respiratory arrest and death. These symptoms may develop very rapidly, and cause death in one or two minutes. In the paralytic form there is flaccid paralysis, which may be combined with convulsive phenomena. There is a marked fall in temperature, proportional to the severity of the shock. If the animal recovers, the temperature slowly returns to normal, and the animal shows a rapid loss of weight extending over one or two weeks after the injection. If the injection is subcutaneous, and not immediately fatal, there is often a local aseptic necrosis of the skin at the seat of injection.

Pfeiffer (35) observed a close parallelism between the extent of the temperature disturbance and the severity of the other symptoms, including the local necrotic changes in the skin. He offers the formula, *(Temp. fall) x (time till temperature becomes normal)*, as giving a numerical expression of the severity of the shock.

All observers have noted reduced coagulability of the blood, a marked and sudden leucopenia and reduction in the number of platelets, followed by an equally marked increase of these elements in animals which recover. Schlecht (40) observed a marked eosinophilia beginning within  $\frac{1}{2}$ -1 hour after the injection of nonfatal doses of the antigen. Incomplete observations made in my laboratory by Dr. Walker indicate that the same eosinophilia occurs after the administration of bacterial vaccines (bacte-

rins) and that it may be possible to employ this fact as a guide to the administration of the latter.

The reduction in the complement, noted by several observers, and on which the reduced coagulability of the blood is believed to depend, has already been mentioned.

According to Sacerdotti (36) the anaphylactic reaction may consist in a simple isolated symptom such as leucopenia or reduction of platelets.

In the following paragraphs I shall mention briefly the deviations from the above shown by other animals, again drawing on Hektoen's article.

*Dogs* are less susceptible. They become restless, sometimes with screaming, then the animal becomes weak, falls, and lies quiet sometimes for hours; feces and urine are discharged. Usually there is no dyspnoea, but often a rapid fall of blood pressure, amounting to 80-100 mm. of Hg., due to peripheral action on the splanchnics. There is often an intense hemorrhagic enteritis (Schittenhelm & Weichardt, 38).

*Rabbits* show respiratory disturbances. According to Friedberger & Gröber (21), these changes, consisting in less frequent, but deeper inspirations, constitute the minimal and at the same time most reliable symptom of anaphylaxis in rabbits. In a later contribution, however, Friedberger (17) asserts that the fall in temperature which occurs in rabbits as in other animals, is the most delicate reaction; that it is sufficiently reliable to be used for forensic purposes, and may be elicited by a dose many thousandths or even a millionth the size required to produce other phases of the reaction. Besides these there may be prostration, with paralysis of the hind quarters, evacuations, and fall in the blood pressure. There may be a short clonic convulsion with heart arrest, due to a chemical rigor of the heart. In most cases, and in most animals, the respiratory arrest comes

earlier, the heart often continuing to beat some little time afterward.

*Man.* I begin by taking two typical cases of anaphylaxis of varying grades of severity. Rare as they are, such cases more than suffice to simulate the present-day interest in this subject. As we shall see later, the investigations begun with reference to these cases of typical anaphylactic shock, have now entered on a vastly broader field of speculation and research, and bid fair to solve some of the most important, and hitherto most mysterious problems of medical science.

Dreyfuss (11) was called February 24, 1907, to see a lad of 7 suffering from a rather severe attack of diphtheria. He had had measles six weeks previously, and chicken pox just before the attack of diphtheria, but was strong, active, and looked well. One year previously, on the occasion of his mother's having diphtheria, he had received a prophylactic dose of antitoxin. Dreyfuss now injected a curative dose of antitoxin subcutaneously over the deltoid. In about 1½ to 2 minutes the child complained of itching over the legs and abdomen, which increased rapidly in intensity till the patient began to cry. Then followed rapidly vomiting, clonic convulsions of arms and legs, disappearance of the radial pulse, dilation and loss of reaction of the pupils, and loss of consciousness, all happening within two minutes from the onset of the symptoms. Then followed stertor and death in about fifteen minutes.

Asam (3) relates the following incident. The patient was his wife.

In August, 1899, she had an attack of diphtheria, and was given antitoxin.

In May, 1900, nine months later, again had diphtheria and was again given antitoxin. There were no symptoms of anaphylaxis.

In December, 1910, more than ten years after the last attack, she had another at-

tack of diphtheria. At 7:00 a. m. anti-toxin was administered subcutaneously in the left thigh. Fifteen minutes later the patient experienced sudden dyspnoea with a feeling of suffocation, persistent sneezing and lachrymation as in severe hay fever. There followed swelling of the eyelids, lips and face and a sensation as if a toy balloon were on her shoulders. There was distortion of the mouth and cramp-like sensation on the right side of the face, with drooping of the other side, inability to swallow, angor mortis. At 7:15 itching began over the entire body, especially over the breast and at the seat of the injection. The face became distorted "beyond recognition," swollen and featureless as in the worse cases of erysipelas. The breast was covered by a red scarlatinal flush. At the seat of the injection there developed a wheal as large as the palm, of a deep red color. A chill with shivering began, and with its onset the dyspnoea diminished. The temperature was 101.8 with pulse to correspond. In the course of the next hour the reddening spread over the entire body. The itching grew steadily more intense and the color over the breast gradually took on a brownish tint. Ability to swallow gradually returned. At 10 a. m. the swelling of the face continued, but the red color had changed to a deathly pallor.

At 11 the symptoms on the part of the face had disappeared. At the seat of injection there was now a palm-sized raised wheal, entirely bloodless, but surrounded by an inflammatory zone. The membrane on the tonsil had in the meantime extended rapidly.

By the next day all symptoms of the attack had disappeared, except that the seat of injection was now an area twice the size of the palm, very red, and hot, indistinguishable from erysipelas. This did not entirely fade away till the fourth day.

There is an interesting question here, namely, whether the necessary incubation

period for the production of the anaphylactic state had not elapsed at the end of the nine months period, when the second injection (which caused no symptoms) was given, or whether the anaphylaxis which manifested itself only at the end of ten years (the longest period on record) was due to the combined effect of the two first doses.

Wiedemann (50) reports a case in which severe and almost fatal symptoms occurred twice in the same patient, each following twenty-four hours after two *internal* administrations of antitoxin, in a patient suspected to be anaphylactic. I have already mentioned the determination by Vaughan, Cumming, and Clumphy, that animals may be sensitized by the enteral route. Wiedemann's case demonstrates the converse, namely, that foreign proteid may under suitable conditions, be absorbed from the intestine without first undergoing the changes necessary to deantigenize it, and thus cause anaphylactic shock.

These are the typical cases of anaphylactic shock. A multitude of other conditions are now coming to be included under the same head. The work of Vaughan, Cumming and Clumphy, and the case reported by Wiedemann afford firm support to the assertion of Friedberger (15) and others, that cases of idiosyncrasy for certain foods, especially proteid foods, belong here, while Wolff Eissner & Vertes (51) suggest that cases of drug idiosyncrasy also come in the same class, the drug being assumed to acquire antigenic properties by entering into such a combination with the body proteids, that the drug becomes essentially proteid in character, at the same time altering the proteids in such a way as to render the latter biologically foreign to the organism. We should at least, regard the man who can't take calomel or eat veal as perhaps something more than the victim of a caprice.

Ströbel (43) offers good ground for



classing bronchial asthma with the anaphylactic diseases. While Friedberger (15), Schittenhelm & Weichardt (38), and many others are satisfied that hay fever belongs in the same group. The latter is important as showing conclusively that an antitoxin for hay fever is impossible. The hay fever patient already suffers from too much immunity to plant proteids. We can help him only by either deimmunizing him, or by immunizing him against his immunity.

Friedberger places the toxic symptoms sometimes observed after opening an echinococcus cyst here. Franz (12), von der Heide (27) and others offer proof based on the toxicity of the urine of parturient animals, behavior of symbiotic animals, etc., that the onset of labor pains is an anaphylactic phenomenon. Abderhalden (1) is inclined to share the belief that eclampsia belongs here. Von Behring (4) adds sympathetic ophthalmia.

Vogt (46) offers rather convincing evidence that death from secondary shock following burns is really anaphylactic, the burned necrotic tissues here acting as antigen.

Friedberger and others would add serum disease, in which the symptoms may be attributed to partial sensitization by some unknown means, or to a destruction of the antigen following the first dose by the normal amboceptor of the organism, as suggested by Friedberger.

The various skin reactions following the intra or percutaneous use of vaccine and bacterial extracts are clearly anaphylactic, and from this fact is derived an important bit of comfort. For just as there can be no immunity without anaphylaxis, so there can be no anaphylaxis without immunity. The question whether there is such a thing as immunity to tuberculosis is therefore definitely settled. The patient at least is more or less immune to those products of the tubercle bacillus to which he reacts. It remains only to prove whether or no this

is or is not the kind of immunity needed to save him from his disease.

Friedberger even (14) goes so far as to claim that all the fundamental symptoms of the most various diseases can be produced at will by anaphylatoxin, simply by varying the amount and spacing of the doses. Accordingly the symptoms of the specific infections are regarded by him as due to the digestion of the infective agent by immune bodies with the production of the poison. Wolff Eissner and Vertes (*loc. cit.*) believe that the further study of anaphylaxis may throw light on conditions as diverse as the auto-intoxications, disturbances of the glands of internal secretion, and the development of tumors.

It remains only to discuss the question of prophylaxis, and here we must remember that the shock following a second dose of diphtheria antitoxin is not dependent on the patient's being immune to either diphtheria toxin or anti-toxin, but on the fact that the patient is immune to horse serum, the vehicle of the antitoxin.

The problem has been attacked from several different angles, somewhat as follows:

1. *By deantegenizing the antitoxin.* Von Behring (*loc. cit.*) showed, as is well known, several years ago, that serum disease and anaphylactic shock are much less apt to occur if the globulin fraction only of the horse serum is employed as antitoxin. Quite recently (4) he has maintained that the use of thus "purified" antitoxin removes all danger. Tourro and Gonzalez (44), however, have recently asserted that although the globulin of the serum is the least important source of the poison, it is still a source, and that, indeed, anaphylaxis excited by globulin alone can be differentiated by means of certain criteria from that excited by the whole serum.

2. I have already cited cases showing that attempts to avoid the danger by avoiding the intravenous, then the subcutaneous mode of administration are ineffectual.

Friedberger and Goldschmidt (20), have shown that the use of a hypertonic menstruum does not inhibit the reaction, and, as already mentioned, Schultz has shown that atropine and adrenalin have no saving effect unless used in toxic doses.

3. Dreyfuss and Asam (*loc. cit.*) suggest that diphtheria antitoxin should be prepared from several species of animal, so that a patient known to have received horse serum antitoxin one or more years previously, might be treated, if the occasion arises, with beef or sheep serum antitoxin. This suggestion has already been carried out by the Hoechst Farbwerke, who now offer beef serum antitoxin.

4. I have not discovered who was responsible for the suggestion that anaphylactic individuals might be recognized by giving a very small dose (1 or 2 drops) of the serum intra-cutaneously; 6 to 12 hours later anaphylactic patients show a local reaction to such a dose, identical in every respect with the local anaphylactic reaction to tuberculin by patients suffering from that disease.

5. The most generally applicable method yet proposed appears to be to render anaphylactic patients antianaphylactic by giving a small dose of the antitoxic serum subcutaneously, to be followed in an hour or so by the full dose. Ciuca (8) found that symptoms could be averted (in animals) by first giving 1-20 to 1-10 the intended full dose, followed 10 minutes later by the remainder. Calvary (7) found that dogs sensitized to horse serum could be protected by a preliminary dose of beef serum, provided about 60 times as much of this is given as would be required of horse serum to produce the same effect.

The methods mentioned in the last two paragraphs above appear to be the most promising of results. Undoubtedly, however, they require further elaboration before they can be entirely relied upon in the case of human patients.

I have already extended my discussion of this subject far beyond ordinary length. Many no doubt important and certainly interesting observations have been omitted. But these could hardly be touched upon without further increasing to wholly unconscionable lengths the tax upon the reader's endurance.

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In every consultation, the benefit to be derived by the patient is of first importance. All the physicians interested in the case should be frank and candid with the patient and his family. There never is occasion for insincerity, rivalry or envy and these should never be permitted between consultants.—Principles of Ethics, A. M. A.

ANY MEMBER DESIROUS OF PREPARING A PAPER FOR THE GLENWOOD SPRINGS MEETING OF THE SOCIETY, OCTOBER 7, 8 AND 9, SHOULD COMMUNICATE AT ONCE WITH DR. W. T. H. BAKER, PUEBLO, CHAIRMAN OF THE COMMITTEE ON SCIENTIFIC WORK.

## MANAGEMENT OF ACUTE AND CHRONIC SUPPURATION OF THE MIDDLE EAR.\*

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\*Read at annual meeting of the Colorado State Medical Society, September 26, 1912.

It is my purpose to endeavor to give the general practitioner a few suggestions for his aid in the care of otitis. It is not my purpose to add anything especially new. I shall endeavor to impress upon you the significance and importance of certain conditions and aid you what I can with a few suggestions regarding treatment.

About twenty to thirty per cent. of school children, as they run, have adenoid vegetations. About thirty to forty per cent. of all children with adenoids are afflicted with middle ear disease. The general physician, and, to some extent, the laity, is aware of the causal relation of adenoids to affections of the middle ear. The growth of this knowledge is encouraging. Formerly earache signified otitis; today it signifies more. It indicates adenoids also in the majority of cases, since many of our best otologists believe adenoids to be the cause of earache. While it is of great importance that otologists constantly emphasize the intimate causal relation between adenoids and otitis in children, we must not lose sight of the valuable prophylactic lesson presenting itself in the adult whose middle ear disease, appearing later in life, had its foundation in youth when removal of adenoids might have saved hearing. A few otologists make a routine practice of removing the adenoids during the early stages of otitis media when not accompanying the febrile diseases and claim superior results. They remove adenoids as soon as there is pain and redness of the drum. Otherwise ex-

\*Read at the annual meeting of The Colorado State Medical Society September 24, 25, 26, 1912.



pressed, I take it, they prefer an adenoid operation without the usual accepted treatment, to the usual treatment without the operation. By this I do not imply that any rely upon either course of treatment alone but generally combine them. Every otologist frequently sees cases of otitis refuse to heal after treatment otherwise appropriate, because the adenoids were neglected; on the other hand, just such cases often recover very satisfactorily after removal of the adenoids without the aid of any other treatment. Children who suffer from frequent colds, periodic earache and recurrent otitis, frequently require little else than an operation for the adenoids and tonsils to entirely relieve these conditions. Nothing so firmly establishes the casual relation between adenoids and otitis as the cure of the latter by removal of the former.

When we remember the importance of an adenoid operation as a prophylactic measure at the outset of a large percentage of cases of acute otitis; that adenoids are the cause of most earache, repeated attacks of which lead to deafness; that adenoids often cause chronic otorrhea to persist in spite of treatment; that they favor exacerbations of chronic otitis; that they are a menace to any course of treatment which does not include their removal; and that failure of so capital an operation as the radical mastoid has not infrequently hinged upon neglected adenoids—when we remember facts like these—we can begin to rate at something like their true value the importance of the removal of these vegetations.

I shall use the term otitis for otitis media. An otitis of eight weeks' duration or less will be regarded acute; over eight weeks, chronic, though this classification is arbitrary.

Pain is the earliest and the most constant symptom and the one causing the patient most discomfort and anxiety in acute otitis. It must receive a double consideration, always. In our treatment, we would

like to relieve it but in doing so we cloud conditions accordingly. On account of this antagonism between the courses pursued, we are confronted by the question, shall we relieve the pain and rely upon guiding our case from other symptoms, or shall we permit the patient to suffer pain for its diagnostic value to us? Authorities are not in accord upon this question. I am inclined to the former view, and therefore try to alleviate suffering. It seems cruel to withhold relief from otalgia. Before administering it, however, the physician should form as thorough a conception as possible regarding the duration, location, character and intensity of the pain. Put the patient to bed. Order a saline cathartic and a liquid or soft diet. Administer to adults sufficient morphine hypodermically to control pain and produce sleep. In children give appropriate doses of paregoric. Place a cotton plug saturated with warm ten per cent. phenol in glycerine in the ear so that it is in contact with the tympanic membrane. Apply dry heat to the ear. A paracentesis, discussion of which will follow, affords great relief from pain.

The second consideration of pain pertains to its diagnostic significance and its value as an indication for surgical intervention.

Although pain is a symptom and operative indication of much merit, it requires careful study and the exercise of sound judgment. It is generally very unreliable in children under six years of age and in nervous individuals. The personal equation must be regarded in the latter. Acute otitis causes pain, which is usually absent in the chronic form except in recrudescence. The absence of pain is not always a favorable sign. After the inflammatory symptoms have subsided, the acute affection often produces extensive destruction of the temporal bone and threatens the life of the patient without causing much pain.

Rest is not given the emphasis that its importance justifies in acute otitis and in mastoiditis. Patients should be commanded to remain in bed until the pain has subsided and active symptoms have disappeared. A few days in bed often prevents a few weeks in the hospital.

In the early stages of an acute otitis, it is impossible to estimate the amount of damage that is taking place in the middle ear cavity and its adnexia. The appearance of the tympanic membrane is unreliable. Who can say this appearance of the drum indicates secretory otitis; that appearance, suppurative otitis and the other tubercular middle ear disease? For this reason the attending physician should always bear in mind the great importance of the early evacuation of pus from the tympanic cavity by a paracentesis. Whatever the case may be, this little operation will afford relief. If the physician in charge is not equipped to perform the operation he should engage an otologist who can do it for him. An early paracentesis will often prevent a subsequent mastoid operation and is vastly preferable. The earlier the drainage is established, the more we prevent the spread of inflammation, ulceration and erosion to the healthy mucous membrane. The longer the purulent exudate is confined to the tympanic cavity in contact with the mucous membrane and ossicles, the greater the tissue destruction and impairment of hearing. Before performing the operation the meatus should be disinfected with a bichloride solution followed by alcohol. If the drum is anæsthetized with equal parts of cocaine, menthol and phenol, and if the incision is made with a very sharp, fine-pointed cataract knife, there will be almost no pain.

After paracentesis the meatus should be loosely packed with sterile gauze. The gauze packing is used principally for its hygroscopic influence and it must therefore come in contact with the incision in

the membrane. The eonchia should also be lightly packed and over this should be placed a pad of gauze held by a bandage. The patient should be placed in bed and given a liquid diet. After a paracentesis and dressing as directed, it is very important that the ear be let alone for a few days except to change dressings daily. There should be no irrigation and no inflation for four to six days. If you meddle, you will receive a penalty in proportion, or your patient will.

Discharge is a symptom of prime importance to physician and patient. For a week or ten days the discharge should be treated as directed under the discussion of paracentesis. In acute cases after the first week, if the discharge is slight or moderate, it may be plugged out daily and any dry or gummy portions can be rubbed from the meatus with plugs dipped in saline solution or ten per cent solution of peroxide of hydrogen. The meatus is then lightly packed with gauze. As the discharge subsides, a little boric acid powder insufflated into the ear is beneficial. In cases of profuse discharge, irrigations may have to be employed. One should use a pint of the chosen solution at a temperature of 110 degrees, which is best administered with a soft rubber ear syringe or a fountain syringe.

In a child under three years old, draw the auricle outward and downward to favor the flow of the current by straightening the canal; in other patients, draw the auricle upward, backward and outward. The solutions in common use are saturated boric acid, bichloride one three thousandth to one six-thousandth, permanganate of potash, etc.

In a typical case of acute otitis discharging moderately in the second and third week, about three or four irrigations a day would perhaps be best, though the frequency should depend on the volume of the discharge. The more profuse the discharge,

the oftener it should be cleaned. In any event, it must be often enough to prevent the accumulation of pus. As the discharge ceases, the flushings should be reduced to once a day or once in two or three days because unnecessary irrigations may masquerade and reduce the integrity of the tissue and retard recovery.

After cleaning the ear, inflations of air drive retained particles from the tube and tympanic cavity and so favor healing. Drying the ear and insufflating a little powder and packing with gauze are the final steps after irrigations. To fill an ear with powder or to give powder to the patient to use, is a mistake and often defeats that which you aim to accomplish, namely, a free escape of the infectious discharge.

A copious discharge of pus, a volume out of proportion to the stage of the affection and other symptoms, is a symptom of prime importance. It signifies that the tissue destruction has reached beyond the tympanic cavity into the antrum and mastoid cells. Irrigations fail to reach the infected areas in this condition, which frequently terminates in complications requiring mastoid operations. Blood in a discharge signifies granulations which in turn generally indicates caries of bone. Offensive odor indicates bone necrosis, except when due to neglected aural hygiene. Local treatment does not act as kindly in these cases as in cases without odor.

The type of infection influences the discharge which is most violent if caused by the streptococcus.

The vital question naturally arises as to how we are to tell, in a given case, whether we have a mild or severe type of otitis. The answer is determined by the history, age, constitutional condition, and the state of the upper respiratory tract. The decision requires the exercises of general as well as special medical knowledge. In the case of a child, who has a cold in the head, who gives a history of repeated colds and snuf-

fles, and further, if he is at times hard of hearing and at other times has otitis and if he presents the usual signs of typical otitis, you are dealing with a mild type and should treat it accordingly, remembering to remove the adenoids.

If, on the other hand, the flow of pus is inordinate in the third or fourth week; if the pus contains streptococci, and especially if there are symptoms of general sepsis and if the otitis complicates the ex-anthemata, we are dealing with a severe type, very liable to complications. Between these two classes of cases will be found various degrees of severity.

Otitis of eight weeks' duration, as previously stated, is classed as chronic. Chronic otitis as a rule, like chronic diseases in other organs, is more difficult to cure than the acute form. However, if faithfully and judiciously carried out for a long time, local treatment will cure a fair percentage of cases in which drainage is good, providing the disease is limited to the mucous membrane of the middle ear. If adenoids, rhino-pharyngitis or debility exist, their removal will greatly increase the percentage of cures. The longer otorrhea has existed, the harder it is to check. Alcohol in strength from 20 per cent to absolute alcohol, silver nitrate 5 to 50 per cent., and various powders are used according to requirements. The following conditions exert an unfavorable influence upon local treatment:

1. A tympanic perforation too small for adequate drainage.
2. Pyogenic tissue in the antrum or mastoid cells.
3. Granulations or polypi that obstruct drainage.
4. Bone necrosis.

For obvious reasons, it is impossible for me, in the limited time at my disposal, to discuss the management of the complications of otitis. I desire very much, however, before relinquishing this opportunity,



to urge upon you the great importance of:

1. Removing adenoids.
2. Performing paracentesis.
3. Observing aseptic technique.
4. Rest in bed.
5. The mistake of meddling.

### *A CASE OF ECLAMPSIA.*

By F. N. COCHEMS, M.D.,  
SALIDA.

This case, referred by Dr. H. C. Miller of Pitkin, is of interest because (1) the early symptoms, occurring at about the sixth month; (2) the occurrence in the third pregnancy; (3) the severity and (4) the treatment with such happy results.

Mrs. D—, age 34, entered the hospital November 4, 1912; family history of no import. First pregnancy, 1904. There was some edema of limbs; albumen slight. Membranes ruptured five days before delivery. Pains were not marked till eight hours before delivery. Baby died two days after birth from injury to head. Puerperium uneventful.

Second pregnancy, 1905. Not as much edema as in first pregnancy. No urinary test made. Labor terminated by forceps on account of weak pains. Baby normal and healthy. Puerperium uneventful.

Third pregnancy, 1912. Patient was over six months pregnant when she was brought to the hospital. Two months ago she noticed some swelling of the ankles, which would disappear in about two hours on moving about. The edema gradually became worse, and on October 1st she could not put on shoes. About October 15th her hands began to swell, and about October 28th her face also showed edema. On October 30th she noticed a dull pain in the pit of her stomach. This pain continued as long as she remembers. The urine gradually decreased and became dark, thick, had a bad odor and burned on voiding. About

November 2nd the urine test showed 10 per cent albumen.

In the morning of November 4th she had a fainting spell. She was taken to the train to come to the hospital. She became unconscious about 7 p. m. At 8 p. m. she had a convulsion, which lasted about one minute. The tender of the engine jumped the track about twelve miles from Salida and an automobile had to be sent out for the patient. As she was being placed in the car she had another convulsion, which was very short. She was delirious during the whole of the ride in, and it required two men to hold her.

Examination showed that she was comatose. Blood pressure, 180. Urine thick, dark, foul odor and solidified on heating. Heart and lungs were negative. The skin was icteric. Breath had a urinary odor; pulse, 66; temperature, 98.4; respiration, 18.

#### OPERATION.

Most careful disinfection of field; ether; rapid dilation of the cervix with Goodell dilator, followed by gloved fingers until two fingers and thumb were admitted well within the internal os. No very rapid dilation being possible by this method, a transverse, curved incision about 2 inches long, was quickly made in the anterior vaginal fornix. The bladder and peritoneum were then dissected up to beyond the internal os by blunt dissection. Now, with blunt scissors a median incision was made through the anterior lip of the cervix to beyond the internal os. Then with combined internal and external manipulations a podalic version was accomplished. Delivery of the child, with the exception of the head was now possible by traction on the lower extremity. Head was too large to pass. A blunt Mayo scissors was passed through the occipital region into the cranium, and by spreading blades on withdrawal of the scissors, the head collapsed and delivery was easily accomplished.

The cervical and uterine incision was now sutured with interrupted chromic cat gut sutures. The uterus irrigated with alcohol through a rectal tube which was retained by iodoform gauze placed in the vagina.

#### POST OPERATIVE TREATMENT.

Patient was conscious in the morning. Salines per rectum and under the skin. She was put in a hot pack for 20 minutes on the first day. Perspired very freely. Hourly uterine irrigations with 25 per cent alcohol for seventy-two hours. Two-hour-irrigations for two days. On the fifth day tube removed and vaginal douches of bichloride 1-4000 and lysol, alternating, continued twice daily for two weeks.

Urine on the first day solidified on heating. It was dark, thick and had a foul odor. Albumen gradually decreased. On the third day she passed thirty-five oz. On the fifth day sixty oz. Blood pressure eight days after, 165; ten days after, 140.

#### MARKED ANAPHYLAXIS FROM GONORRHOEA PHYLACOGEN—REPORT OF CASE.

By F. B. Stephenson, M.D., Denver.

Mr. C., age, 26; pulmonary tuberculosis, now quiescent. Has had varied treatment for chronic gonorrhoeal urethritis and vesiculitis extending over a period of several years.

Previous treatments had included injections, irrigations, local unretroscopic applications prostatic and vesicular massage, medication by mouth, diet regulation, vaccination with stock mixed, stock gonoccal and autogenous vaccines and dilatation (by sounds) of several strictures. I was unable to mention any drug or mode of treatment with which patient was not familiar from one or more trials.

History given of constant discharge, somewhat held in check by self-performed permanganate irrigation, exacerbated when no treatment was used.

First smear stained with Gram method, Bismarck Brown counterstain; showed many brown diplococi, some of them intracellular.

Gonorrhoea phylacogen was suggested as of possible service and its use agreed to by patient after a full explanation of the expected reactions and the experimental nature of the treatment.

#### Results.

In each case, patient was not seen until day following injection.

October 25—5 cc. gonorrhoea phylacogen,

subcutaneously over abdomen. Reaction; distinct chill; felt feverish; nausea; headache; anorexia. Discharge, same yellowish drops expressed in morning as heretofore.

October 26—5 cc., subcutaneously over right gluteal region. Reaction, same; discharge, unchanged; temperature, 98½ degrees; pulse, 70, regular.

October 27—10 cc., left gluteal region; reaction, about the same; discharge, unchanged; temperature 97½ degrees; pulse, 70, regular.

October 28—10 cc., intra-scapular region; reaction, less marked, but weakness increased; discharge, unchanged; pulse regular; tenderness in both groins and more soreness in urethra; cough more irritating and some soreness in chest not before present.

October 29—10 cc., right gluteal region; reaction, same as last; weakness complained of; pulse, regular; temperature not taken; discharge, unchanged.

October 30—10 cc., left gluteal region; reaction, severe; pulse, regular, 70; temperature, 97 degrees; discharge, unchanged.

October 31—10 cc.; reaction, severe; patient appeared at office on afternoon of following day pale, out of breath and said he had fallen from faintness that morning; pulse, irregularly intermittent; temperature, 96 degrees; edema of feet and legs, almost to knees; edema of hands and wrists; edema of scrotum and penis; edema and much tenderness in inguinal region; edema and redness over sites of all injections; urticaria, severe and general; stethoscope showed no heart murmur; urethral discharge unchanged.

Patient was stimulated and helped to his home and, of course, no further administration of phylacogen was done.

Following day, 10 a. m. (November 2)—Edema and urticaria rapidly disappearing; pulse, regular; temperature, 97 degrees; color, good; discharge, unchanged.

Of most prominent note are:

1. Absence of any effect upon urethritis to date, November 4.
2. Dangerous appearing phenomena after seventh daily injection.
3. Increased soreness of old lesions in urethra and chest soon after beginning of treatment.

Progressive weakness and loss of weight.

## Constituent Societies

### WELD COUNTY.

The regular meeting of The Weld County Medical Society was held in the City Hall, Greeley, Monday evening, January 6th. President D. W. Reed in the chair.

Roll call of officers: Reed, present; Broman, present; Lohan, present; other members present, Doctors Harmer, Knowles, Pogue, Thompson and Ringle.

Minutes of previous meeting read and approved.

Moved by Dr. Knowles and seconded by Dr.

Ringle that the Society express their sympathy to Dr. and Mrs. Chapman over the death of their little daughter. Carried.

Drs. Knowles, Ringle and Thompson were appointed a committee to attend to the same.

Papers of the evening: President's address, "Modern Medicine and Surgery," by Dr. D. W. Reed. He spoke of the great advance made in medicine and surgery during the last two decades, laying special stress on bone surgery, gland transplantation, partial and complete removal of the stomach, skin grafting, and the great work that is now being done on Internal Secretions. Dr. Reed spoke briefly on the causes of the diminishing birth rate and spoke very enthusiastically on the new science of Eugenics, which he thought would do much for the future generations.

The next paper by W. O. Weber, D. D. S., "The Close Relation of the Dentist to the Physician." He said that the relation between the doctor and the dentist should be as close as the relations between the general practitioner and the oculist, the laryngologist, or the obstetrician, and the patient should be regarded as an individual and not as a collection of separate organs to be treated alone. He brought out the point that many times mal-nutrition, asthenia and anemia may be due to troubles of the mouth and teeth and this in a child may lead to dire results. Doctor Weber spoke very highly of nitrous oxide and advised its use more by the physicians. A vote of thanks was given Dr. Weber for giving the Society so instructive a paper.

The paper was discussed by the various members.

Meeting adjourned.

(Signed) J. W. LEHAN,  
Secretary.

#### COLORADO OPHTHALMOLOGICAL SOCIETY.

The monthly meeting of the Colorado Ophthalmological Society was held on January 18th, 1913, in the offices of Drs. E. M. Marbourg and J. A. Patterson, at Colorado Springs. Dr. Marbourg presided.

Attendance, 16.

Dr. O. Orendorff presented a girl of 18 years of age who had suffered for some time from quiet iritis in each eye. Both pupils were bound down to the capsule of the lens, and the irises were ballooned. Treatment by iridectomy was suggested.

Dr. F. E. Wallace presented a case of unilateral exophthalmus in a colored woman aged 38 years. The eye was otherwise normal. Pathologic growth in the orbit was regarded as the probable cause.

Dr. J. A. Patterson presented a case of rodent ulcer at the inner canthus of the right eye, in a woman of 58 years. The condition had been developing for 12 years or more.

Dr. J. A. Patterson presented a man of 43 years whose left eye had a flat pigmented growth on the conjunctiva to the nasal side of the cornea. The growth was possibly a melanosarcoma.

Dr. J. A. Patterson presented a case of

spontaneous absorption of a cataractous lens, secondary to penetrating wound with a piece of chicken wire, in a man of 21 years.

Dr. J. A. Patterson presented a boy of 11 years whose left eye had been penetrated by a large piece of iron. In removing the foreign body with the magnet a piece of uveal tissue had also come away. The remains of the lens lay in the anterior chamber.

Dr. J. A. Patterson presented a woman of 25 years in whom a bilateral interstitial keratitis had run its course without either pain, laceration, photophobia, or redness, the patient having come on account of diminished vision.

Dr. A. C. Magruder presented a case of bilateral specific iritis.

WILLIAM H. CRISP,  
Secretary.

#### FREMONT COUNTY.

The regular meeting of The Fremont County Medical Society was held on the evening of January 27th, in the office of Dr. Adkinson at Florence. There were fourteen members and three guests present.

Dr. George H. Curfman of Salida, read a carefully prepared report of seven cases of ptomaine poisoning, with five deaths. Although the identity of the poison and its source were not determined, the doctor believed the symptoms more nearly resembled the form of meat poisoning known as botulism.

Dr. Davis of Portland exhibited an abscessed kidney removed by anephrectomy, containing two stones, one a large one, and a gauze sponge left by a former operator. He recited the history of the case and showed an X-ray photograph taken of the kidney before operation.

Dr. Cummings of Florence exhibited a splendid specimen of tenia solium and detailed his method of treatment.

The following officers were elected for the ensuing year: Dr. V. A. Hutton of Florence, President; Dr. Edwin A. Clarke of Cañon City, Vice President; Dr. W. T. Little of Cañon City, re-elected Secretary-Treasurer; Dr. Royal C. Adkinson of Florence, Delegate.

W. T. LITTLE, Secretary.

#### PUEBLO COUNTY.

Tuesday, January 21, 1913.

The Pueblo County Medical Society met in regular session, President Adams presiding. There were twenty-two present.

The paper of the evening was presented by Dr. Keeney, titled "Colonic Stasis." Dr. Keeney paid special attention to the recent advances in the etiology of this condition regarding the various kinds. Veils and adhesions and their relation to surgery. The discussion was opened by Dr. Peairs and was participated in by nearly all those present.

A motion carried that a committee of five be appointed to meet with the city commissioners and request that the physicians of this



city be allowed to disregard the speed regulations in instances of emergency. Drs. Singer, W. T. H. Baker, Lord, Peairs and Woodbridge were appointed. It was further ordered by the Society that this same committee interview the commissioners in regard to properly numbering the residences and call their attention to the duplication of names of several streets.

Adjourned.

J. H. WOODBRIDGE,  
Secretary.

#### LARIMER COUNTY.

The regular annual banquet of The Larimer County Medical Society was held in Northern hotel, February 5th, 1913. It was attended by Drs. E. J. A. Rogers, I. B. Perkins and Robert Levy of Denver, and Gillaspie of Boulder. Every physician in the county, so far as known to secretary, was invited to be present. The doctors connected with the veterinary college of the State Agricultural College were also invited and four were present.

The following sat down to the banquet: Drs. Levy, Gillaspie, Whitehouse, Hoel, Quick, Carey, Taylor, McHugh, Atkinson, Rogers, Barnes, Kingman, Newsome, Sadler, Cramer, Joslyn, McFadden, Kickland and Stuver. Dr. Perkins, who was detained, came on a late train and joined us at the beginning of the program. Dr. Stuver acted as toastmaster, in the absence of Dr. Hoel, who had been called out to attend a case. Dr. McHugh responded to the toast, "The County Medical Society." He called attention to the importance of the County Society as an integral part of the great medical organization and then discussed the best method of arousing interest in the work of our local Society. In the absence of Dr. Hughes of Weld county, Dr. E. J. A. Rogers of Denver was next called upon. He spoke on the importance of psychotherapy and suggestive therapeutics in the practice of medicine, surgery, indeed in all fields of the healing art. He took as his text, "The General Practitioner and His Obligations to His Clients," and very clearly showed that by neglecting the proper use of psychotherapy the physician is neglecting one of his most valuable resources and not only failing to do the greatest amount of good to his patient but is permitting this work to be taken up and done by various bodies of sectarians who fatten on his neglect and the medical profession incurs loss and blame. He pointed out the dynamogenic power of mind and showed how by proper suggestion and calling into action the mental powers of the patient the whole vital activity could be increased and wonderful results be attained. His address was clear, able and convincing, and was very much appreciated by the audience.

Dr. Robert Levy spoke on "The Sanitary Laws and Regulations of Moses." He called attention to the fact that while many of the regulations were of a religious character and promulgated for that purpose, still they produced a sanitary result; a large part of his

speech was in a lighter vein, calling attention to anecdotes and incidents about the Jewish race; it was in his inimitable style and very highly appreciated by all.

Dr. I. B. Perkins spoke on the "Good of the Order" in the characteristic Perkinese manner; he oscillated between grave and gay and gave a most delightful and at the same time very instructive address.

Dr. Gillaspie of Boulder County Society, gave a very interesting talk on the "Men Who Follow Us." He pointed out how medical education and training might be improved in the future and a better rounded and more symmetrical physician be produced.

Dr. Hoel, having returned to the room, was called upon and made a few remarks. At the close of the program an informal social conversation was indulged in and many rich and racy stories told. Taken all in all, the meeting was very interesting and instructive, and the most enjoyable one the Society has ever held.

Dr. Stuver, the Secretary, presented the following resolution, which was duly seconded and unanimously adopted:

#### Resolution.

Whereas, The Panama Canal Zone was formerly the home of pestilence, disease and death, and almost uninhabitable by white men, and,

Whereas, By his executive ability, administrative skill and great knowledge of diseases and how to control them, one man has banished pestilential diseases, converted the canal zone into a healthful place and made possible the successful execution of the greatest engineering project in the world's history, be it therefore

Resolved, That The Larimer County Medical Society, in regular meeting assembled, does hereby suggest and recommend that Col. William C. Gorgas be placed at the head of the proposed National Department of Health and that we urgently request the President of the United States to appoint him Secretary of Health and a member of his Cabinet.

E. STUVER, Secretary.

#### OTERO COUNTY.

The Otero County Medical Society held its regular monthly meeting at the High School building in this city on Tuesday evening.

Dr. Miller of La Junta, read a paper on "The Use of the Laboratory in Making a Diagnosis."

Out-of-town doctors in attendance were: Drs. Miller, Finney, Edwards and Bronk of La Junta

Any member desirous of preparing a paper for the Glenwood Springs meeting of the Society, October 7, 8 and 9, should communicate at once with Dr. W. T. H. Baker, Pueblo, chairman of the committee on scientific work.

## News Notes

Dr. J. N. Hall spent two weeks in January at the Mayo clinic at Rochester.

Dr. and Mrs. A. A. Blackman, Colorado Springs, are spending the winter at Palm Beach.

Dr. and Mrs. P. V. Carlin have gone to Honolulu.

Dr. George W. Miel, the watch dog of the treasury of the State Society, was the toastmaster at the banquet of the staff of St. Anthony's Hospital.

Dr. Harvey W. Wiley was the guest of the Medical Society of the City and County of Denver at a luncheon given at the Shirley Hotel on January 29th. His after-dinner remarks concerning pure food and patent medicine legislation were interesting and enlightening.

Dr. Oscar Hayes has been appointed to succeed Dr. Albi as superintendent of the Steele Hospital in Denver.

Dr. H. J. Prentiss, professor of anatomy at the University of Iowa, spent several days in January examining the Medical Department of the University of Colorado. He was assigned to this duty by the Carnegie Foundation.

Dr. P. J. McHugh of Fort Collins has been to Washington for the purpose, it is said, of lobbying for the retention of the tariff on sugar.

Dr. C. D. Spivak is a patient at St. Joseph's Hospital. He was operated upon recently for appendicitis by Dr. O. M. Shere.

Dr. Leonard Freeman spent two weeks at Corpus Christi recently.

The following was the program at the annual meeting and banquet of the Larimer County Medical Society held at the Northern Hotel, Fort Collins on February 5th:

### Program.

Dr. E. Stuver, Toastmaster.

1. "The County Medical Society".....  
.....Dr. George L. Hoel
2. "Good of the Order".....Dr. I. B. Perkins
3. Toast of Weld County Medical Society.....Dr. Hughes
4. "The General Practitioner and His Obligations to His Clients".....  
.....Dr. Edmund J. A. Rogers
5. "The Sanitary Laws and Regulations of Moses".....Dr. Robert Levy
6. "The Men Who Follow Us".....Dr. C. Gillaspie

## Book Reviews

**The Practice of Medicine. A Manual for Students and Practitioners.** By Hughes Dayton, M.D., formerly of the Cornell University Medical School, New York. New (2d) edition, thoroughly revised. 12mo, 326 pages. Cloth, \$1, net. The Medical Epitome Series. Lea & Febiger, Publishers, Philadelphia and New York, 1912.

After a student has read an adequate description of a disease it facilitates study to have at

hand an abstract containing the essential facts of the matter read. Every student should be required to make an abstract of his text-book for his own use. Such work demands careful reading and the exercise of judgment in the selection of important facts. Such, however, is not a common requirement. Publishers have stepped forward to furnish ready-made abstracts to supply a very real student need. The manual of Dayton follows Osler closely. The latter being the most popular text-book in American schools, Dayton's manual is well adapted to present anew and quickly the important matter passed over in the student's more extensive reading. So used the book is of value. It serves a good purpose and is worth the price.

### EXOPHTHALMIC GOITER.

C. H. Mayo, Rochester, Minn. (Journal A. M. A., July 6), discusses the factors of safety in operations for exophthalmic goiter. This was formerly attended with a large mortality, but that these factors are being recognized is shown by the lessened mortality of from 1 to 4 per cent of today. The estimated proportion of cures is about 75 per cent, though some of the symptoms may persist to a minor degree but not enough to affect the working ability or general health. Within the past year the Mayos have operated on a consecutive series of 278 cases without a single death, which the author believes is due to taking advantage of the so-called "factors of safety" in the treatment, preparation and operation of the patient. These are given as follows: 1. As regards operating during periods of exacerbation or excessive activity of the disease; the mortality in these cases is frequently high and they are such we would choose for medical treatment, i. e., rest, x-ray, etc., with attention to the heart, stomach and intestines according to the indications presented by the individual case, until the exacerbation of symptoms subsides. 2. Gastric crises and acute delirium are serious manifestations and operations should not be done until the conditions have subsided; the cases, until then, being medical. 3. Dilatation of the heart which exceeds 1 inch is a serious condition, while that of  $1\frac{1}{2}$  inches will give a percentage of unavoidable mortality for the radical operation of thyroidectomy. The line of treatment is, therefore, indicated. 4. Ligation as a method of surgical treatment has an accredited position in the treatment, and in the early stages patients are sometimes wonderfully improved by simple double ligation. These cases, however, are comparatively recent and might at this stage have recovered without it. 5. Serious risks are treated by a single ligation of the vessels at the upper left pole. The reaction is about three-quarters as severe as from a double ligation, but the missing one-fourth is an element of safety. If the reaction be very severe a second ligation of the right upper pole is made a week later and the reaction following this is slighter. If it is not severe at this second operation the right lobe, isthmus, and possibly a portion of the left lobe



are removed. In some cases of extreme emaciation, yet with a temporary fair or improved condition, a double ligation is made at the one operation. In several hundred patients the average gain of weight after ligation was 22 pounds within four months. At this time a thyroidectomy of one-half or three-fourths the gland can be done with small risk. Ligation of vessels should be made close to or including some of the pole itself to prevent reversal of circulation through anastomoses of the inferior artery. Thyroidectomy of three-fifths or more of the gland is indicated in most chronic cases in which dilatation of the heart does not exceed 1 inch and in which there are no complications. The small percentage of relapses within one or more years after partial thyroidectomy should have the benefit of further operation. The primary procedure should be ligation of the vessels at the superior pole. If this is not successful a part of the gland can be exercised later with but little risk. Ether preceded by atropin and morphin is the anesthetic of choice, but if there is extreme nervousness scopolamin is used, and the worst type of cases with heart and kidney disease are operated on with local anesthesia or have the benefit of Crile's anocia preparation—injecting local anesthesia into the operative field in addition to the other preparations before ether is given. A tabulation of the cases operated on concludes the paper.

#### CATHARSIS.

First giving an account of the physiology and bacteriology of the intestines, E. P. Quain, Bismarck, N. D. (Journal A. M. A., July 6) says that the function of peristalsis is not limited to the propulsion of intestinal contents but also aids in causing circulatory changes aiding absorption and a more rapid assimilation of absorbed products. Hence, if pathologic products exist in the intestines, increased peristalsis may aggravate the symptoms and in acute inflammations within the abdomen, nature's effort is to subdue peristalsis about the infected region. Hence nothing should be done to increase it. He criticizes the common use of salines as tending to destroy the bactericidal properties of the intestinal secretions, and calomel comes under similar condemnation to some extent. When a cathartic is necessary oil is probably the least harmful to the mucosa. An internal secretion stimulating peristalsis has been obtained from the gastric mucosa and from the spleen, and when it can be isolated it promises to become the physiologically ideal intestinal evacuant. Search of his clinical records shows him that all fatal cases of acute appendicitis, with or without surgical intervention, had, without exception, received and retained some active cathartic at the beginning of the disease, while abdominal inflammations similarly unpromising that recovered had not suffered from the factor of purgation. It has become his custom to inquire at once in all these cases whether or not any physic has been taken, and the knowledge thus gained has been of great importance to him in prognosis. He has also noticed that patients coming for abdominal operation in emergency without previous preparation suffered less from gas dis-

tention than those that had been carefully prepared beforehand and this he has attributed to the use of cathartics in the preliminary treatment. The food he finds passes rapidly through the stomach and small intestine but remains from twenty-four to forty-eight hours in the cecum. A certain equilibrium between the physiologic and bacterial processes is essential for normal bowel function and saline cathartics disturb this poise to a large extent. After the intestinal mucosa has been depleted by cathartics it takes some time for it to recover its energy and in the meantime bacteria flourish. Intestinal antiseptics is dubious, a comparative asepsis is practical. For artificial evacuation of the large bowel no drug acting on the small intestines is required. High rectal injections are efficient. Patients prepared for laparotomies by restricted diet and rectal injections have much less postoperative trouble than those that have been purged.

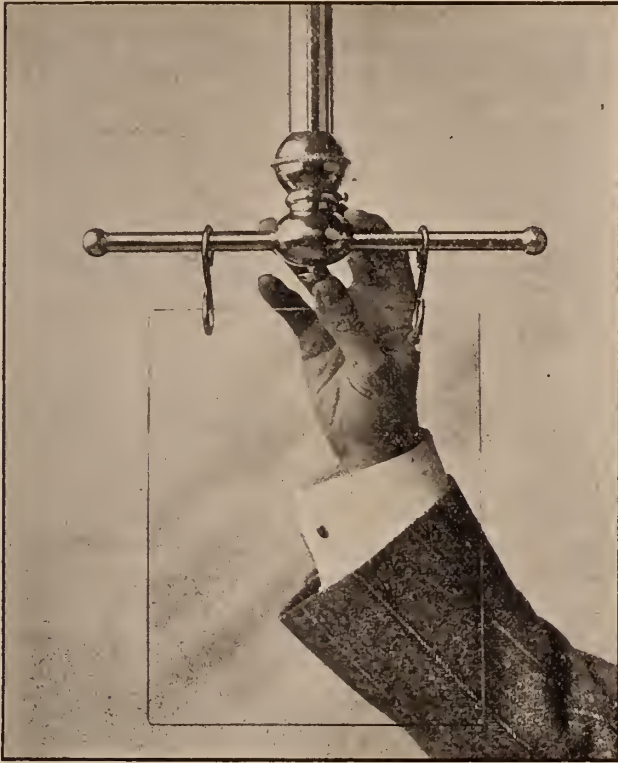
#### ARTIFICIAL IMPREGNATION.

Döderlein, in the *Münchener medizinische Wochenschrift*, May 14, 1912, writes in part as a commentary on Rohleder's recently published monograph on this subject. The percentage of sterile women appears to range from 8 to something over 20, according to the material studied. In recent years our knowledge of the causes of sterility has increased notably. In a large proportion of cases the causes can be determined and perhaps corrected, but there is a residue in which no cause is to be found in either husband or wife. It is this so-called essential or functional sterility in which artificial impregnation appears to be indicated. We know that after years of sterile wedlock these women may suddenly conceive and this appears to justify anticipating this possible climax, especially as animal experiment gives positive results which are suggestive for human work. The author, like Rohleder, has one personal case to his credit. His patient, aged 24, had been sterile six years and had undergone the usual treatment of the cervix. The husband's spermatozoa were normally active. Some of the latter were injected into the uterus just before menstruation. The next period was normal, but after that the menses ceased. There had been no coitus meanwhile. The woman is now four months pregnant. This is the sixth attempt of the author in this field. The technique is simple. With everything in readiness coitus is performed with a condom, the semen transferred to a sterile dish and a little of it at once thrown into the uterus with a Braun's syringe. In theory great care should be employed throughout to secure asepsis, for a case is on record in which as a probable result of gonorrheal spermatoecystitis the wife was infected through the intrauterine exposure. As a matter of fact, however, accidents of this sort must be extremely infrequent and too much asepsis would be felt by the spermatozoa, for example, should the syringe be first boiled in caustic soda. Care must be taken not to inject too much semen lest it make its way from the uterus to the tubes and peritoneal cavity, there perhaps to set up ectopic pregnancy.



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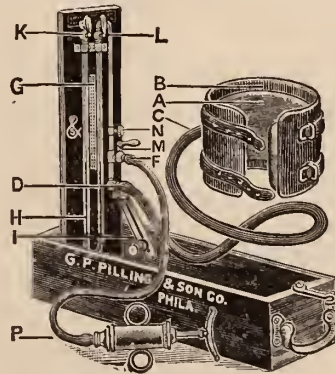


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EDITOR, Charles S. Elder, M. D., Metropolitan Building, Denver

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MARCH, 1913

NO. 3

## Editorial Comment

LAST CALL FOR VOLUNTEERS FOR THE PROGRAM OF THE NEXT MEETING OF THE STATE SOCIETY! SEND NAMES AND TITLES OF PAPERS TO DR. W. T. H. BAKER, PUEBLO.

### LEST WE FORGET.

The attention of members who have not paid their dues is called to the fact that they stood suspended from their County Societies on March 1st. On April 1st the secretaries of component societies must send in their annual reports to the state secretary. All who have not paid their dues by that time will be automatically dropped from the rolls of membership of the State Society. Such members, however, can be reinstated at any time. Each member so dropped will receive a letter from the office of the state secretary notifying him of his delinquency. COLORADO MEDICINE will be discontinued, and the names of all delinquents reported to the American Medical Association on the 5th day of April.

Every year there are a small number of members who become delinquent. It is in most instances a matter of carelessness. If such members realized how much work this carelessness caused they would be more considerate. The obligation financially is not large and should not cause embarrass-

ment. No one can afford to be a suspended member. It is bad enough never to have been a member, but it is infinitely worse to have been and then be dropped for non-payment of dues. It is still worse to let the habit of being dropped become chronic.

A physician's standing depends upon his being a member in good standing in his county and state societies. In removing from one state to another society standing is important. Insurance companies are constantly making inquiries of the state secretary regarding the membership of prospective and present examiners. Some companies ask for a membership list that they may see for themselves. Outside of the pecuniary advantages of membership, there is a higher side and that is the natural desire which every physician should have to be associated with his fellows for the purpose of advancement and for the betterment of the health conditions of the community in which he lives. We all need each other. No man can be a whole physician and stand absolutely alone.

### THE FRIEDMANN "CURE."

A physician will take little interest in a reputed "cure" until its claims are proven. He knows that the assertions of men who are honestly enthusiastic over the results of their own work are nearly always disappointing in the end. The people misconstrue this indifference. They think it is

due to prejudice or envy. We have all been asked about the Friedmann treatment for tuberculosis. It has been so well exploited in the daily press that it is imperative that we should know something about it. Until Dr. Friedmann is willing to tell us more than he has yet told it will not be time for us to consider the matter. But the insistence of the curious requires that we should be familiar with the little that Dr. Friedmann has thus far revealed concerning his treatment. Accordingly Dr. Philip Hillkowitz has taken, from Friedmann's original papers and the discussion thereon, whatever might seem to be of importance or promise, and prepared a paper on the subject for this issue of COLORADO MEDICINE.

#### *DISHONEST METHODS OF ADVERTISING..*

The Dios Company of St. Louis have come to the rescue of the long-suffering general practitioner with an eye wash ready made for his use. The pamphlet setting forth its virtues is cleverly gotten up. An abstract of an article by Dr. Frank Van Fleet, Surgeon to the Manhattan Eye and Ear Hospital, New York, is used in such a way as to cause the reader to infer that Dr. Van Fleet is in sympathy with the methods of the Dios Company and has given his permission to their use of his paper. A letter recently received from Dr. Van Fleet denies that he gave them permission and says the Dios Company used his article without his knowledge or consent. This is an outrage, and the worst of it is that there is but little that he can do about it. Fortunately any firm which takes this underhanded advantage of a reputable physician brands itself as dishonest and unfair. It is also highly probable that its products are much like itself. These medical houses, however, are supported by the medical profession. By using and prescribing their made-up and bottled "prae-

tice of medicine made easy" we become the E. Z. Y. mark. Any patent medicine house that sends out literature containing abstracts of articles of reputable medical men unaccompanied by the printed permission of the author should be at once branded by us as dishonest and unworthy of our consideration, let alone our support.

### *Original Articles*

#### *SOME PRACTICAL CONSIDERATIONS IN PROSTATIC SURGERY*

WM. N. WISHARD, M. D.  
INDIANAPOLIS, IND.

In considering the subject of the surgery of the prostate this evening the writer will endeavor briefly to discuss some points that have seemed of practical value in operative technique and pre and post operative management.

It has been but a comparatively short time since the generally accepted warrant for operation was a degree of obstruction and consequent disturbance of the bladder which no longer made systematic catheterization tolerable. Such an attitude is scarcely commendable at present. It is well recognized that better results follow prostatic enucleation where attempts are made to remove the obstruction before it has attained great size, before the kidneys and bladder have suffered from back pressure and bacterial invasion has occurred. The amount of tissue to be removed is less and the deformity of the prostatic urethra is more easily corrected whether the growth be benign or malignant.

The limitations of this paper will not permit a discussion of benign and malignant growths and for the practical purposes of our consideration this evening, emphasis will be laid upon the prostatic



obstruction rather than prostatic hypertrophy or malignant disease. In either it is pretty well recognized that the mechanical factor is usually the primary influence developing disturbance of bladder function as manifested by frequent urination attended with a varying amount of irritability of the bladder, a modification of the force and size of the stream, and the presence of a variable amount of residual urine. The presence of a growth half the size of an almond and located at or near the vesical orifice may give such sharp mechanical obstruction that complete retention occurs, whereas a growth of very large size not impinging on the caliber of the prostatic urethra and vesical orifice and not producing any displacement of either, may occasion no symptoms of any kind whatever. In making a diagnosis we are usually dependent upon the degree of functional disturbance of the bladder which has lead the patient to seek relief, and even though examination is made immediately after the occurrence of symptoms, we may sometimes find a very small and again a very large prostate.

The writer only ventures to refer to the foregoing well recognized facts to emphasize his belief that the future statistics of success or failure in this department will bear very close relation to the question of whether an early or a late diagnosis and operation have been made. The classical period of developing symptoms is from fifty-five to seventy years although they sometimes occur at an earlier or much later period. It is usually not difficult to determine by the clinical history and examination of the patient, that the symptoms are due directly to obstruction in the upper end of the prostatic urethra or within the bladder, but it is not infrequently impossible to determine the exact relation of this mechanical obstruction to the bladder outlet and consequently the final diagnosis of the

mechanical condition is oftentimes made only when the finger is inserted into the prostatic urethra and the bladder.

Much stress has been laid upon the cystoscope in recent years and it is of great value in diagnosing prostatic overgrowths, but its findings are often misleading. In many cases where the prostatic urethra is not only elongated, but where the angle is greatly increased, it is apparent that the introduction of a cystoscope, the shaft of which is rigid, and which must be passed far enough for the distal end to be within the bladder, must necessarily convert a curved channel into a temporarily straight one, and that in doing so there is a certain amount of displacement of the vesical orifice.

If the growth is located behind the vesical orifice such displacement of the tissue gives a very misleading impression on inspection. Ideal cystoscopy to convey a correct impression as to size, shape and position of the growth, should be made through a suprapubic opening, but this of course is impracticable except in rare instances. In two or three of the writer's cases where suprapubic trocar puncture and temporary catheter drainage through the suprapubic puncture has been used in cases where catheterization could not be done, it has been possible to enlarge the suprapubic opening sufficiently by dilatation to give a good direct inspection from above. The appearance in two of these cases was strikingly different from that obtained when the congestion had subsided sufficiently to permit the introduction of the cystoscope by the natural channel. Upon inserting the finger into the bladder at the time of operation, one rarely finds that the intraurethral and intravesical conditions tally exactly with the cystoscope appearances previously observed. Fortunately we are able to be guided in deciding to operate by the fact that obstruction exists rather than by the exact me-

chanical relation of this obstruction. Possibly the radiograph may in the future give clearer conception of the mechanical conditions existing than is now possible by any other form of pre-operative examination.

#### CHOICE OF OPERATION.

The type of operation to be selected in all cases has not yet received sufficiently general agreement to be stated with very great positiveness. Consideration of several points is essential in determining the exact method of surgical procedure. In the first place the best result will usually follow where the operator selects the method with which he is most familiar. However, consideration for the patients's interests demands that those undertaking as grave a procedure as the removal of the prostate shall familiarize themselves with each of the three different procedures now in vogue. The operation itself should involve as little risk to the patient's life as possible and as little damage to related structures, and as little disturbance to the urinary and sexual function as possible. We should take into consideration the fact that only a part of the prostate is usually involved in the hypertrophic process and that the offending part of the growth is the intravesical or the intraurethral portion, or both of these. Keeping in mind the varying directions and degrees of encroachment on the bladder and urethral space, it is evident that a procedure admirably adapted to a large intravesical growth is not necessarily the one best adapted for a small intraurethral growth, or for one located on the posterior margin of the vesical orifice and associated with some narrowing and displacement of the latter. Perhaps the so-called symmetrical hypertrophy, presents mechanical conditions which give better opportunity for the advocates of each of the different methods of attack to emphasize their individual views. Unfortunately

perfect uniformity accompanying symmetrical hypertrophy is only one of various forms of encroachment upon the urethral and bladder space with which we have to deal.

Notwithstanding the difficulties involved one should recognize the desirability of obtaining information in each individual case as far as possible of the exact nature of the deformity as a key to the line of attack to be selected. The present state of diagnostic resources limits us chiefly to the information obtained by the catheter and by rectal examination, by the cystoscope, and the symptomatology of individual cases.

#### SUPRAPUBIC INCISION.

Suprapubic operation is the oldest and perhaps the most generally employed and it is the one where there is greater uniformity of opinion as to technic as well as to the advantages and disadvantages of the operation itself. It is claimed by its advocates to remove the obstruction with more certainty than any other method and to be a simpler surgical procedure. There is however, some difference of opinion as to the point of cleavage to be chosen as well as to what is actually to be removed.

Two different views as to what is actually removed are presented in the following quotation from a paper recently read by Doctor Hugh Cabot of Boston, before the Mississippi Valley Medical Association:

"It seems to me inconceivable that the whole prostate can be removed by this route and I am unable to appreciate by what process of mind so sound an observer as Mr. Thompson Walker can hold such opposite views. He said at the last meeting of L'Association Internationale d'Urologie in 1911: "The operation consists in the enucleation with the finger of the entire prostate, consisting of both lateral lobes and usually an intra-vesical portion. This is surrounded by a firm cap-

sule, and within the ring thus formed is the prostatic urethra. I have elsewhere shown that this is the entire prostate, and that the line of cleavage passes between the prostate and the sheath. The evidence upon which this statement is based, consists of the examination of the walls of the cavity from which the prostate was removed, which show no prostatic tissue or only an isolated portion here and there, and in the examination of the specimen removed. As to this Cabot says:

"A careful examination of the specimens removed will, I think, habitually show no portion of the ejaculatory ducts and if this be true the whole argument falls to the ground since that duct traverses the posterior lobe through half its extent and must necessarily be removed in anything approaching total prostatectomy. The error must, I think, have arisen from the similarity in appearance of the tumor removed by the suprapubic route to the general contour of the prostate. This is however merely an illusion and careful study will show an absence of prostatic tissue, of ejaculatory ducts, and very generally of the structures of the verumontanum."

Dr. Cabot further says:

"As regards the question of damage to other structures there will again be no wide difference of opinion. It avoids entirely, damage to other organs, damage to the rectum and to the sphincters of the bladder being practically unknown. Destruction of the remaining prostatic tissue and the ejaculatory ducts can be avoided with less difficulty, then by any other route and I am in complete sympathy with the view of Zuckerkandl that in the preservation of potency and the avoidance of sterility it is unquestionably superior to any other operation. I would again, however, call attention to my be-

lief that these are wholly minor considerations."

"Since the lengthening of the urethra is due to the backward growth of the prostatic tumor, the urethra promptly returns to its normal length by the ingrowth of mucous membrane from all sides. Stricture such as occasionally occurs after some types of perineal operation cannot occur here though it is possible that fragments of the true capsule may be pushed into the proximal end of the urethra by gauze packing and should no instrument be passed for a considerable period after operation, blocking up of the urethra at this point may occur. This is of course readily avoided by the passage of any instrument, even a catheter during the first week or ten days. I believe it to be useless to deny that the mortality of suprapubic prostatectomy is higher than that following the perineal operation. This is not denying the accuracy of the remarkable statistics of Mr. Freyer but for reasons above stated these cannot be accepted as representing the average mortality which is, I believe, more nearly fifteen per cent. We shall do better service by investigating the causes of this mortality then by denying the facts. These causes lie in the greater amount and less efficient control of hemorrhage, in the production of shock, which is I think not wholly that due to hemorrhage, in the greater liability to infection due probably to less efficient drainage and in the greater danger of hypostatic pneumonia due to the longer confinement to bed. Of these, hemorrhages, shock, and infection, should be avoidable by better technic and the incident of pneumonia should be at least reducible by the elimination of infection and by the lessened strain upon the patient's general condition due to the diminution of hemorrhage and shock. I am strongly of the opinion that a more efficient control of bleeding is practically the key to the whole situation.



I am quite aware that the earnest advocates of this operation state publically that with them hemorrhage is not a serious consideration, but after a thorough trial of the methods which they advocate, I am unable to share their view that hemorrhage can always be controlled. Irrigation of the bladder by any method will not always work in my hands and results in the loss of amount of blood which seems to be wholly excessive. I have yet to see any method of packing which is universally and promptly efficient and it clearly adds to the probability of infection while interfering seriously with the efficient drainage of the bladder and the comfort of the patient. I am not at present prepared to advance any cure for this evil, but I do not believe that a degree of surgical skill which has brought us so far along the road, will fail of finding a thoroughly satisfactory solution of this difficulty."

The foregoing quotation from Dr. Cabot's paper presents some of the facts with reference to the suprapubic method very fairly and quite clearly, and coming from an advocate of the high operation, is entitled to careful consideration. That it does give more direct access to all intravesical growths, and to some intraurethral growths, and that it insures a more perfect result as to bladder function with less impairment of the sexual function, can scarcely be denied. On the other hand, it is undeniably a more dangerous operation.

#### PERINEAL PROSTATECTOMY.

Not including the method of Prowst which employs a curved pre-rectal incision, there are at least in this country two distinct methods of perineal enucleation of the prostate. First; the trans-prostatic method of Young involving an inverted V-shaped incision with direct opening of the lower end of the surgical capsule on either side with extra-urethral enucleation. Although the technic is somewhat elaborate

it cannot be doubted that in suitable cases with Young's technic carefully followed, it involves a minimum of shock and hemorrhage, and comparatively moderate danger to the sexual function. Second.

#### MEDIAN PERINEAL PROSTATECTOMY WITH INTRAURETHRAL ENUCLEATION.

This is the older of the different methods of perineal incision and involves the opening of the membranous urethra, dilatation and exploration of the prostatic urethra, vesical orifice and direct attack upon the obstructing tissue. If the growth is large and lies well within the bladder it involves some difficulty in occasional cases to secure complete enucleation, and it cannot be doubted that there are occasional cases where it is not applicable.

In his experience of twenty-two years and a half in prostatic surgery, the writer has found two cases where it was impossible to do satisfactory enucleation through a median perineal opening, and where it was subsequently necessary to do a suprapubic operation. In some other cases he has been led to make a primary suprapubic opening from evidence secured by the cystoscope and other methods of examination. However, these have been exceptional cases and he has in most instances depended wholly upon the median perineal incision. In cases where the enlargement extends down to the lower end of the prostate, the finger after being passed into the prostatic urethra is drawn down to near the apex of the prostate at a point where the extreme lower portion of the hypertrophied tissue is felt and an oblique lateral puncture is made through the urethral wall which gives access to the lower end of the surgical capsule and enables one to pass the finger around the growth and enucleate it.

In passing it may be remarked that the growth is often more easily detached from the surgical capsule than it is from the urethral mucous membrane, and after the fin-

ger has been inserted through the lateral opening as above suggested, the posterior portion of the growth is first detached by the finger or blunt instrument from the surgical capsule and enucleation extended forward. After this has been done an effort is made to pass the finger around the growth and to detach it from the upper end downward along the urethral wall, and it is frequently possible to do this without detaching the mucous membrane of the urethra and yet in a minority of cases, some mucous membrane may be removed. A modification of Ferguson's retractor which the writer has had made is helpful in bringing the growth within reach.

Those who have carefully studied the condition of the tissue at the time of operation and have made subsequent examination of their specimens, have recognized that the growth is usually more firmly adhered to the urethral mucous membrane than it is to the outside of the so-called surgical capsule. The intimate relation of the mucous membrane to the growth itself, makes it impossible, in the writer's judgment, to remove the hypertrophied tissue without some damage to the mucous membrane in a certain per cent. of cases, whether a median perineal operation, or Young's method, or the suprapubic incision is employed. Indeed in the hands of many, the suprapubic operation contemplates the entire removal of a certain amount of the urethra.

As to the question of traumatism to the urethra in median perineal operation, the writer has repeatedly inserted a large endoscopic tube through the median perineal opening a few days after operation and found by direct inspection that the entire channel was perfectly covered with mucous membrane. At the present time a pathologist is examining about one hundred and fifty of the writer's specimens, which unfortunately are all that have been preserved from those operated, and from the

specimens so far examined, the pathologist reports that he has found mucous membrane in about ten per cent. of the specimens of the type above referred to. Attention has heretofore been called to the fact that the growth by no means always involves anything like uniform enlargement and may present a very small or a very large growth at the vesical orifice, pedunculated or otherwise, without much or possibly any enlargement discoverable by rectal or intraurethral examination. In such cases the finger is passed directly into the bladder if possible and a point of cleavage selected by the sense of touch and detachment secured by the finger. Middle lobes are easily removed this way and contractures of the vesical orifice with marked elevation and forward displacement of the upper end of the urethra is dealt with by forceps and finger dilatation followed by division on the floor of the prostatic urethra down to a point estimated to be the original position of the vesical orifice.

When the growth lies high and the finger is not easily inserted into the bladder, detachment is secured by selecting a point of cleavage at the lower end of the growth and detaching from below upwards and after its detachment it is removed from the bladder by large stone forceps and if there is a corresponding growth on the opposite side, it is dealt with in the same way, after which it is usually easy to pass the finger into the bladder and carefully examine any remaining offending tissue.

Median perineal prostatectomy was first done by the writer in 1891 and was reported to the American Association of Genito-Urinary Surgeons at its following meeting under the title of—"A New Method of Removing the Lateral Lobes of the Prostate." Goodfellow did the same operation during the same year and his own and the writer's work were done without knowledge of each other and published in-

dependently. Personally the writer believes the median perineal opening has distinct advantages over any other procedure in all cases of small or moderate sized growths, principally those involving more or less contracture of the upper end of the prostatic urethra. He recognizes however, that it is not of universal application although he regards the exceptions as rare. It involves less time and distinctly less shock and a lower mortality than the suprapubic operation and while there may be greater liability to incontinence and to fistula, these are conditions which are usually controlled and which do not outweigh the undoubted greater mortality of the higher incision.

The question of sexual function has been discussed at considerable length by various writers, but this should be regarded as a minor consideration in relation to the more important question of restoring the urinary function. Whether the newer pathology which regards the enlargement of the prostate as being a true adenoma superimposed upon the prostate is correct or not, it would seem that the removal of this obstructing tissue by any method should not seriously impair the sexual function, if it still exists, unless the operative technic involves undue traumatism to the prostate proper and the ejaculatory ducts. While impairment of the latter may involve sterility it does not necessarily involve impotency.

#### PRE-OPERATIVE TREATMENT.

While it may be true that preparatory treatment for any considerable length of time is unnecessary in some cases, still it is obvious that the period of preparatory treatment affords an opportunity for better study of cases, especially where the operator has had no previous opportunity to observe the patient. The writer has been impressed with its value in connection with more thorough examination of the patient in relation to co-existing complications,

and the opportunity to direct attention to their improvement as far as possible.

In considering local conditions, the amount of residual urine as well as the character of the urine, has influenced the decision as to the length of time and the way in which the catheter should be used prior to operation. In many cases the amount of residual urine is so variable, and is influenced by other things than the prostatic obstruction, to such an extent, that it is often a matter of difficulty to determine the average quantity of retained urine present.

A loaded rectum, a little congestion or edema about the neck of the bladder, exposure to cold, fatigue and other influences require constant attention, as modifying the amount of residual urine. In patients with long continued distention and a so-called atonic bladder, greater care is usually required in gradually lowering the bladder pressure, and attaining a point where the bladder may be kept periodically or continuously empty by the catheter. With the bladder already infected and of moderate or small capacity, the earlier resort to continuous or periodical drainage, is usually more easily attained.

It has been the writer's custom for many years where possible, to secure drainage by catheter anchorage during a greater or less length of time before operation, and where the anchorage of a catheter cannot be borne, to have recurrent catheterization as systematically followed as possible. Night drainage and periodical catheterization during the day has been found especially advantageous as it does not prevent exercise during the day and secures better rest at night. Relief of bladder irritability, improvement in the condition of the urine especially in the diminution of the amount of pus, epithelial debris, and improvement in the specific gravity, reaction, the odor, and the per cent. of urea have been usually observed



where this plan has been followed. Continuous night and day drainage has been used in many cases, and if the patient is under proper control this can be done by wearing a urinal during the day or by clamping or tying the catheter and releasing it at comparatively short intervals for emptying or irrigating.

In the past year or two more attention has been paid to the functional elimination test, and the influence of treatment upon it. Improvement in elimination has generally followed systematic use of a normal saline solution by the bowel, administered by slow installation, and the drinking of plenty of water and improvement in the patient's color, strength and general condition has usually followed. Where improvement in elimination and the general condition of the patient does not follow rectal instillation, catheter drainage and other local treatment with attention to diet and general hygiene, and the use of supportive remedies, the operative risk is greater.

The more discriminating use of urinary antiseptics has been suggested by gastric and renal irritation, following the prolonged use of large doses of urotropin. If renal elimination is good, as shown by urinary analysis, prolonged use of urinary antiseptics is not imperative. Where the urine is alkaline and offensive in odor, and pus present in considerable amount, it has seemed desirable to use urotropin for several days before operation, and to continue its use guardedly for a few days afterwards.

The average period of preparatory treatment required in the writer's cases, has occupied from one to two weeks and while some cases have been operated upon earlier, others have been maintained upon preparatory treatment for a much longer period.

#### POST OPERATIVE TREATMENT.

As bearing upon the post operative

handling, the writer, especially for the past few years, has tried to limit the period of anaesthesia as much as possible by having everything ready before hand and expediting the operation as much as practicable. Ether is usually used, followed by oxygen at the moment the operation is completed, and in some cases the two have been combined, or given alternately. Gas and oxygen has its advantages where it is evident that a comparatively short period of anaesthesia will be required. During anaesthesia normal salt solution is given by hypodermoclysis in practically all cases, and the heart's action further supported by the previous use of strychnia, of which one-twentieth of a grain is usually given shortly before anaesthesia is commenced. The nausea and marked depression following prostate operations, and the period of post anaesthetic stupor has been greatly lessened by this routine of oxygen immediately after the withdrawal of the anaesthetic, and the patient is usually taken to his room with good color and pulse and a warm body surface, and certainly in better condition than where oxygen has not been used.

Whether a suprapubic or perineal operation is performed, liability to post operative hemorrhage is much influenced by the carefulness with which enucleation is done. A patient also may leave the operating table in excellent condition, and hemorrhage may occur as a result of careless handling in removing him to his bed, or delay in reestablishing two-way irrigation. The last thing done before the patient is taken from the operating table to his room, and the first thing after he is put to bed, should be the use of continuous irrigation. Ordinarily it should be continued from two to four hours with brief interruptions, and longer if necessary, and the amount of flow regulated by the height of the irrigating tank and the thumb-screw cut-off of the tube attached to the

inflow, making the force of the stream only strong enough to secure a gentle steady flow.

In perineal operations whether a safety pin or a shield in the case of rubber tubes, or a metal disk in case of solid tubes is used but very little gauze should be placed between the perineum and the safety pin or other securing device. Two or three thicknesses of thin gauze is sufficient, and it is better to use none at all than too much, as its inevitable tendency is to displace the tube in lifting or moving the patient. A heavy gauze packing outside the securing device is, however, important, and should be supplemented by one or two hard folded towels, and the outer one of the towels folded in three-cornered fashion like a diaper, and over this a firm "T" bandage applied, the security of which is further assured by pinning the protruding ends of the last towel together over the perineal straps of the "T" bandage. Careful bushing behind the scrotum with cotton or gauze at the moment the "T" bandage is tightened is helpful in holding the testicles well forward and avoiding sagging which otherwise may be followed by epididymitis.

In median perineal operations, the writer has found much advantage from the use of a solid metal inflow and outflow tube, devised by his assistant, Dr. H. G. Hamer, (*American Journal of Urology*, Feb., 1910.) If a two-way tube is used its walls should be as firm as possible, as pressure from packing within the wound and around the tube, may occlude the outflow. On changing the dressing and removing the gauze packing the morning following the operation, the metal tube above referred to is also removed and subsequently a single soft rubber drainage tube is used. In doing this the inflow metal tube is unscrewed and removed and the outflow metal tube left in position while a large rubber tube is inserted through the latter into the bladder. The

drainage capacity of the tube is then tested by irrigating and the outer end of the rubber tube is then held firmly with the left hand while with a slight rotary motion the right hand withdraws the metal tube from the bladder over the rubber tube, leaving the latter in position. The gauze packing is then slowly removed by grasping the outer end of each piece with a pair of forceps and slowly twisting the loose gauze into a small cord. Gauze packing should always be twisted into a round rope to facilitate removal and not pulled out without twisting. Three or four hours before the change of dressing the attendant is instructed to inject three or four ounces of sterilized sweet oil into the bladder and to close the outflow tube for ten minutes. The oil thus injected finds its way around the drainage tube and to some extent is absorbed by the gauze and makes the latter much easier to remove, and consequently lessens the danger of bleeding when the packing is removed. In addition, oil is also injected onto the gauze around the soft rubber drainage tube after the latter's insertion.

In suprapubic operations, an open-ended soft rubber tube with an eye on the side about 30 French has answered very well, and it is supplemented for the first two days by a small rubber catheter 14 or 15 French, which is passed about one-half inch deeper than the larger tube, but neither is allowed to reach the bottom of the bladder. The smaller tube answers very well for the first forty-eight hours for two-way irrigation if desired and after its removal the larger tube can be depended upon. This method has seemed to answer somewhat better than the use of the Freyer tube or the two-way rubber drainage tubes, used by some operators, as it usually gives a better outflow while irrigating. If catheterization is easy, it can be used by the urethra after the first two days following the removal of the

smaller suprapubic tube; however, the larger suprapubic tube alone usually suffices for irrigating and it can be removed in three or four days and substituted by a smaller one.

If shortly after operation, shock has been evident, and marked depression, hypodermoclysis has been used, or the opening of a vein and the transfusion of a normal salt solution, has been made, and in few cases adrenalin has been added to the solution introduced into the vein. Slow proctoclysis has been used to advantage in some cases to anticipate and lessen shock. In two cases where shock was profound one dram of adrenalin was added to about 1,000 c. c. of normal salt solution and seemed to exert an immediate and strikingly helpful influence upon the heart's action. In other cases a smaller quantity of the adrenalin has been used with the normal salt solution by hypodermoclysis. In the two cases where a large quantity of adrenalin was used there was marked chilling of the surface of the body within an hour afterward, necessitating the careful application of hot blankets. The handling of the patient has been greatly facilitated by the separate and complete wrapping of each leg in a blanket, and this also facilitates the handling of whatever drainage apparatus may be employed. The blanket and also the normal salt injection may contribute to profuse sweating, but this is usually controlled by the hypodermic use of atropia.

The early resumption of regular diet, frequent change of position of the patient, and the use of increasingly smaller drainage tubes, to be replaced as soon as possible by a drainage catheter in the natural channel, or periodical catheterization are desirable. The question of getting the patient up early is, the writer believes, to be fairly regarded as still debatable. Getting the patient in the semi-upright position the first or second day

following operation, by a properly adjusted body support, has seemed both beneficial and desirable in the writer's experience, but in no case has he ventured to get the patient on his feet the day following or even the second day following a prostatectomy. Perhaps the writer's views on this question may be somewhat influenced by the fact that in one case where a patient was apparently in good condition he had him put in a semi-upright position on the second morning following operation, and an hour later the patient died of embolism. Frequent change of position and the early resort to the semi-upright position have, however, been constantly regarded as of great importance.

In closing it may be said that while incontinence may not follow suprapubic operations, a fistula may occur either after suprapubic or perineal prostatectomy. Careful and thorough excision of the cicatricial tissue and thorough curettement of the deeper portion of the fistulous tract under local anaesthesia followed by suturing, and the maintenance of drainage by an anchored catheter in the urethra, has been followed by prompt closure in all of the few cases of persistent fistula which the writer has observed after suprapubic or median perineal prostatectomy. Two cases of fistula have been referred to him where an inverted V-shaped incision and extraurethral enucleation had been done according to Young's method, and in one of these, closure was secured, but in the other the fistula persisted and in both there was associated incontinence. Occasional occurrences of fistula however, is not necessarily an argument against any form of enucleation. Permanent incontinence has not followed in any of the writer's cases operated by median perineal incision, although it has persisted for a greater or less length of time in some of them. Systematic and persistent use of dilatation of the prostatic urethra and vesical orifice with Kollmann's dilator has usually given relief.



*DEVIATED NASAL SEPTUM—ITS  
INFLUENCE ON THE GEN-  
ERAL HEALTH; SURGICAL  
TREATMENT.\**

ALEXANDER C. MAGRUDER, M. D., COLORADO  
SPRINGS.

No specialist can practice his specialty to best advantage without an intimate and up-to-date knowledge of general medicine. I recognize that in this day, when so many new theories are advanced, substantiated by facts laboriously worked out; when medical literature is so voluminous; when important discoveries are crowding one another for consideration at the hands of the medical profession, it is almost impossible for the general practitioner to keep up with medical literature, and that when he meets an article on the eye, ear, throat, or nose, he either notes it for future reference, and seldom gets to it, or passes it by as "not in my line." So, too, the specialist sticks too closely to his own particular journals. I do; but I religiously attend our County Medical Society meetings, and the meetings of the Colorado Springs Clinical Club, largely for the purpose of keeping up with general medicine.

So in that same spirit the general practitioner, whether the small town or country doctor, the surgeon, the internist, or the pathologist of the city, should embrace every opportunity to hear what the specialist has to say, particularly when he deals with those conditions which have a general or systemic influence.

The nose is one of the most important organs of the body. It contains the peripheral endings of the olfactory nerves; it is used in voice production; it is the natural drainage canal for the frontal, ethmoid and sphenoid sinuses, and the antrum of Highmore. It also receives

all lachrymal secretions, and in addition it is the natural entry-way for air used for ventilating the middle ear. The nose is a defensive organ, causing us to avoid harmful odors and gases. Above all, it is the normal channel for all air taken to the lungs. About ten thousand liters of air pass through the nose every twenty-four hours, with an average of fourteen hundred germs to each liter; yet when the air has passed through the nose, it is nearly sterile.

The septum divides the nose into two parts, the one being the counter part of the other. Its normal position is absolutely in the median line and vertical. Any other position than this is recognized as a deviation. Let me say here that in seven years special work, including both my private practice and hospital clinics, I have never seen an absolutely perfect and an anatomically normal septum. These deviations vary from slight graceful curves to the most complex crumpled conditions. Sometimes a great convexity to one side or the other completely blocks one nostril, causing atrophy of the inferior and middle turbinates on that side, while on the opposite side we find a large concavity frequently with a compensating hypertrophy of the inferior and middle turbinates, causing a blocking the nose on that side.

The nose is the first assistant to that most important and vital process, respiration. It is necessary that this first assistant be in perfect health that it may do its work as it should be done. The mucous membrane of the nose, together with the accessory sinuses, secretes about one liter of fluid in twenty-four hours. One object of this fluid is to properly moisten all inspired air. It is well known that this inspired air must be moistened to a certain degree of saturation; that it must be warmed to body temperature; and purified by filtration before it can be properly utilized by the lungs; that is, before the oxy-

\* Read at the Annual Meeting of the Colorado State Medical Society, September 25, 1912.

gen contained in the inspired air can be given up to the blood. Anything which interferes with the proper warming, moistening, and filtering of the inspired air produces an oxygen starvation with a long train of symptoms varying in degree according to the impairment inside the nose.

So you see how important it is to us that the nose does its work properly; but let a deviation of the septum throw this nicely balanced piece of machinery out of kilter, and what are the results? many and serious.

One of the greatest ill effects is the alteration of the inspired air—its direction, its volume, and its composition. Normally the air taken into the nose does not go straight back through the inferior meatus along the floor of the nose. It follows the curves shown in this chart—as demonstrated by Goodale in 1896. We can thus better understand why the patient complains of inability to breathe easily through the nose even though the inferior meatus is open. Whorls of air are formed in the upper parts of the nose and in this way the air is better warmed and moistened. Even a slightly deviated septum rearranges these currents and may cause hypersensitive areas and inflammation of the mucous membrane in almost any part of the nose. This alteration in direction of the inspired air is especially noticeable in the region of the throat end of eustacian tube, resulting in otitis media chronica, and deafness from improper aeration of the middle ear. A more pronounced deviation of the septum causes occlusion of the nares, blocking drainage from the accessory sinuses frequently resulting in inflammation of the sinuses, persistent headache, and so called ocular neuralgias. The volume of air is necessarily reduced and its moisture content and temperature are not brought to normal.

With these blocked noses we find the mouth breathers sending air to the lungs

improperly prepared for use. Far too much of the oxygen taken into the lungs comes out as oxygen, unused because it was not properly prepared for use. The unfiltered air carries bacteria, dust, and other harmful substances, to the pharynx, larynx, trachea, and lungs, and inflammatory processes are set up in those regions. Thompson of Cincinnati in the August issue of the *Laryngoscope* says: The results of years of study may be briefly summarized—all patients with an old obstructive lesion in the nose have a chronic laryngitis, tracheitis, and usually bronchitis.''

We are much concerned with tuberculosis. I have frequently stated that I thought every tubercular patient should be carefully refracted that any error might be corrected and thus conserve to the patient that nerve energy, small tho it may be, that is used to overcome the refractive error. It is equal to adding that much more nerve force to the patient's fighting ability. But important as I consider the foregoing, in a far greater degree do I think it necessary that every tubercular patient's nose should be put in the best possible condition.

Some layman has said: "In tuberculosis the nose is the whole thing." I won't go so far as that; but I do believe that given two tubercular patients exactly alike in weight, physique, mental training: the one a perfect counterpart of the other, save that one has a deviated septum and the other has not, the one with the deviation will not make the recovery from tuberculosis as easily as the one with the normal septum.

I know many of you will feel that you cannot put your patient's to such additional expense; but you will not have done your full duty to your patient until you have looked into his nose for abnormalities and corrected such as exist, or, not feeling capable of passing judgment, you send him to a competent nose man.

Every tubercular chart or case card of the general practitioner should contain a diagram of the nose and have recorded there the condition of the interior of the nose, viz; deviations, exostoses, ecchondroses, turbinate bodies (hypertrophied or sclerosed) the condition of the mucous membrane, catarrh, etc.

Why do I say that the nose should be examined and made as nearly normal as possible? The answer is first, oxygen starvation from obstruction; second, indigestion from swallowing infected mucus; third, cough from the stringy mucus adhering to the pharynx and post nasal region; fourth, a tendency to nose bleed from hyperemia or detached scabs. The dry pharynx, which is so common in tubercular patients, is frequently caused by mouth breathing; yet all of these people would deny it if accused of breathing through the mouth. Look around this room at your leisure or study any assemblage of men, women, and children, as I have done, and you will find from thirty to fifty per cent. with a narrow lip fissure through which they are breathing, because they are not getting, comfortably, through the natural channel, all the air the body demands. Or listen, and you will hear harsh breathing through obstructed noses.

Etiology—what of the etiology of these deviations? St Clair Thompson gives the best classification that I have seen and as it embraces all the causes that I can gather from other sources, I do not hesitate to present it in full.

Diathesis—Roe and Delivan say that septal deformities occur more frequently in strumous, syphilitic, tubercular, and rachitic persons. My experience does not agree with this. I do find more deviated septa in tubercular patients; but probably that is because I come in contact with a greater number who have tuberculousis.

Racial Characters—McKenzie examined 2,152 skulls and 1,657 showed deformity of

the bony septum. This is about 75 per cent. Two hundred and sixty-three European skulls examined by Zuckerkandl gave the same results. In 92 skulls, other than Europeans, Spiess found 68 without deviation and 24 with deviation. Roe says that in the African, Mongal, and Polynesian, deviations occur in about 20 per cent. Potiquet says that in 400 skulls examined in Paris, the facial angle is more and more inflected in an ascending series as we proceed from the Anthropoid ape to the European, and that progressively with this the septum is more prone to deviation. Thompson gives two causes for the larger number of deflected septa in Caucasians. First, the increase in cranial development and the enlargement of the facial angle, and second, the admixture of different races (exceptions Jew and North American Indian.)

Age—In young children deviated septa are rare before the permanent teeth come in. Frankenberger's examination of school children showed 9 per cent at the age of 6 years. At 17 there were 17½ per cent, increasing at the rate of 1 per cent a year.

Sex—Abnormal septa are said to be more frequent in males, and is explained by the greater exposure to traumatic influences.

Heredity—This plays a rather unimportant role save through transmitting a facial likeness which may operate in producing narrow noses and high arched palates.

Intranasal exciting causes—Of all causes, I believe the faulty development of the septum is far more responsible for a deviation than many of us recognize. Anatomists tell us that the vomer at an early age consists of two laminae separated by a very considerable interval and inclosing between them a plate of cartilage, which is prolonged forward to form the remainder of the septum. Ossification us-



usually commences about the eighth week of foetal life. From this nucleus the two laminae are formed. They begin to coalesce at the lower part, but their union is not complete until after puberty. Any hypernutrition of one lamina or lack of nutrition in the other will cause an irregularity in the vomer which irregularity will be even more pronounced in the cartilage.

Affections of the Septa—Vertical or horizontal overgrowths of the septum are caused by excessive nutrition, and spurs and ridges are the result. These occur chiefly where the vomer and superior maxilla join, at the anterior border of the vomer, and at the anterior border of the ethmoid where it joins the cartilage.

Affections of other regions of the nose—The high arched palate causing direct pressure on the septal area, encroaching on the space normally occupied by the Septum causes the septum to be deflected to almost any angle.

Excessive development of the turbinates—Any over growth of the turbinated bodies may cause the septum to be pushed to one side. Many believe that the hypertrophy of the turbinates is always secondary to a deviation and not responsible for the deviation.

Extra nasal exciting causes—Traumatism is said to be the most frequent cause of deflected septa. The deflection may be brought about either by fracture or dislocation of the septum or inflammatory processes of traumatic origin may be set up causing a hypertrophy with a resulting deviation, spur, or ridge.

Surgery—The surgical aspect of deviated septa, I expect to dismiss very briefly; because, even if the general practitioner or surgeon knows the surgical procedure, I would advise that he go slowly before attempting it. It is not an easy operation; but as Roe says: "The correction of a deformed nose, in which so much is involved to both the patient and the surgeon, may

be likened to matrimony, which should not be entered into unadvisedly or lightly; but reverently, discreetly, and advisedly." Then too, the minute surgical procedures are not of sufficient interest to a body of this kind, and to go into detail, might start a lengthy discussion among the specialists.

I think the submucous operation is *the* operative procedure. The deviation is usually attacked on the convex side by making a more or less perpendicular incision through the mucous membrane and perichondrium at one stroke of the knife, near the anterior border of the cartilage. There is a definite line of cleavage between the perichondrium and the cartilage which we follow and separation is for the most part easy, but where inflammatory products have been thrown out and adhesion has taken place, it is sometimes most difficult to break it up without lacerating the mucous membrane. This is always to be avoided. Then, too, the deviation frequently presents mechanical obstructions which interfere with the separation of mucous membrane and cartilage. Following the line of cleavage, the elevator or separator is passed well up to the bridge, down to the vomer, and below any spurs or ridges occurring there. In other words, the separation being complete over the entire deflection on the convex side, we then attack the cartilage with knife or eurette along the line of the original incision, being careful not to injure the mucous membrane on the opposite side. Through the opening in the cartilage we begin the separation of the mucous membrane on the concave side and proceed as before. The cartilage is then free from its mucous membrane and perichondrium. A Ballenger swivel knife is then used. With one sweep backward, downward, and forward, the cartilage is incised and may be removed in one piece through the primary incision. The bony parts of the deflection are then

attacked with suitable forceps. It is nearly always necessary to attack the nasal spine of the superior maxilla, as this is a frequent site of spurs. This is more difficult, both on account of pain and bleeding.

In the finished operation the septum should stand perpendicular in the median line and both nostrils should be free from above to the floor of the nose, and from the vestibule to the choanal opening. A light packing and the operation is complete.

The saw and chisel, the old fashioned fracturing forceps of Aesch, the burr and the cautery have no place in an operation on a deviated septum, and no amount of treatment can correct this deviation, save in young subjects when the orthodontist widens the teeth and relieves the pressure on the septum caused by a high arched palate.

Contra indications are acute inflammations in the nose or accessory sinuses, but sometimes we are compelled to straighten a septum before a diseased accessory sinus may be properly reached for operation. Active syphilis and tuberculosis of the nose, or even advanced pulmonary tuberculosis are contra indications, while the very young and the very old had best be left unoperated. No bad effects have been noted from the operative procedure when properly done, and the old fear that a sunken nose may be the result, is without foundation.

Many rhinologists believe that asthma and hay fever are cured by correcting deviations of the septum. I do not believe this is true but many of these cases are materially benefitted.

Dr. W. C. Bane says:

The deformed septum that obstructs nasal respiration contributes to impairment of the general health by interference with proper tempering and cleansing of the inspired air, forcing the subject to inspire air directly through the month, thus ex-

citing inflammatory processes in the pharynx, larynx, and lungs. The re-establishment of proper nasal respiration favors the general health by aeration through the natural respiratory chambers.

Dr. Wallace says:

The most serious general condition, caused by a deviated septum is a more or less, vicious lowering of the vitality of the whole economy.

Dr. Levy says:

You must realize that so important a subject should receive more than a limited amount of serious consideration. However without referring to my case records it is my impression that the most serious ill effects on the general health caused by deviated septum is due to the nasal obstruction caused by this deformity and by its secondary results. A large proportion of these, in which one side of the nose is partially or completely obstructed by deflected septum, present also obstruction in the opposite nostril due to hypertrophic changes of the turbinates. These chypertrophic changes are secondary to the deflection upon the opposite side as was pointed out by Bosworth years ago and which I think still holds good. Nasal obstruction not only interferes with proper drainage of the accessory sinuses but also so interferes with normal breathing that the patient's nutrition suffers. Added to this a certain toxemia due to faulty drainage, evidences of malnutrition, are increased and more manifest. After successful operation drainage and improved nasal respiration are established and in many instances the nutrition of the patient has been remarkably improved as evidenced by improved digestion and increase in weight, leaving aside the improvement in local manifestations and replying directly to your question I believe that the above represents the result of my experience.

Dr. Robinson says:

My experience leads me to place among

the graver results of a deflected septum, ethmoiditis and sinusitis, and their train of complications.

Dr. Pattee says:

In my opinion a deviation of the perpendicular plate of the ethmoid bone or a deflection opposite the middle turbinate, either osseous or cartilaginous (or a combination of both) is the cause of more serious ailments in the nose, in the accessory sinuses and even constitutionally than any other form of septal deflection. Its effects, directly and indirectly, adjacent and remote are numerous and serious.

Dr. Gallaher says:

A deflected septum predisposes to diseases of adnasal cavities and of the ears. Interfering with physiological breathing (heating, moistening and cleansing of the air) the parts below the nose must suffer, hence in its wake follows affections of the Rhino-Pharynx and Larynx and pulmonary conditions.

In pulmonary tuberculosis, after the arrest of the disease, correcting the deviation is of marked benefit to the patient.

Dr. Dennis says:

Outside of the regional effects of a deflected nasal septum, such as naso-pharyngeal laryngeal, tracheal and ear troubles, the harm which comes from obstructed nasal respiration is due to the deleterious results of insufficient oxygenation—an oxygen starvation.

This oxygen starvation brings about a lowered state of the general well being and in addition lowers resistance to infections of various kinds.

The re-establishment of efficient nasal respiration will accomplish the removal of this hindrance to robust health and by supplying oxygen properly to the organism will bring about an improvement in all the metabolic processes, resulting in health.

Dr. Mullin says:

Next to nasal obstruction I derive my greatest results from correction of the de-

viated nasal septum in bronchial asthma and in stopping the cough in reflex bronchitis. Laying great stress on the complete removal of the "Vomerine Spur" when present. Even in tuberculosis of the lungs the correction of the deviation will have a marked influence on the cough. In closure of the Eustachian tube with retracted eardrums I find it the quickest way to give permanent relief.

Dr. Marbourg says:

The most apparent effect of deflected septae upon the general system in my observation is upon the middle ear.

This is due to the mechanical obstruction of the nasal passage, causing retention of the secretions which results in a chronic hyperaemia of the surrounding tissues extending to the post nasal area and thence along the course of the Eustachian tube, resulting in chronic catarrh of the middle ear.

To summarize: At the door of a deviated septum may be laid:

1. General malnutrition from lack of oxygen.
2. Diseases of all the accessory sinuses and certain ocular conditions, from blocking of drainage.
3. Chronic rhinitis, bronchitis, pharyngitis, laryngitis and tracheitis, from mouth breathing.
4. Indigestion from swallowing large quantities of mucus, probably loaded with bacteria.
5. Nasal catarrh aggravated.
6. Otitis media chronica, from improper ventilation of the middle ear.
7. Asthma and hay fever probably benefited.

A large percentage of the above conditions are cured by a submucous resection of a deviated septum and by this operation tubercular patients are given a greater fighting chance to overcome this scourge of humanity.



## DISCUSSION OPENED.

**Dr. Franklin E. Wallace, Pueblo:** I wish to emphasize some of the points brought out in the paper. It is the duty of the doctor to study and understand these conditions for the welfare of his patients. If he does not care to take the time to study these cases he should send them to somebody who does. As the doctor has stated, the conditions brought about by deviated septum as well as other obstructive lesions, are very grave in some cases. The lack of drainage from the sinuses and lack of the proper ventilation results in improper function of the sinuses and other parts. Then on top of the congested condition brought about we have an infection finally which leads to sepsis and the resulting general systemic condition, as mentioned by Doctor Magruder. Under such conditions the bars of constructive metabolism are let down and the whole gamut of vicious micro-organisms and their pathogenic and pernicious products have sway. We thus see the importance of this obstruction, either through deviated septum or from other causes.

Experimentally and clinically it has been demonstrated that the tubercular bacilli are present in the nasal cavity and the post-nasal spaces, so that on top of these catarrhal conditions we can have an infection from the lymphatic channels which lead to the tuberculous glands which have been mentioned by Doctor Magruder as being very important as a class of patients.

Goldschmidt calls attention to the fact that the nose is closely related to other organs and cites instances in which cauterization or resection of some of the points of the nose has brought about a cure of pain in the stomach or symptoms of the genitalia and regions of the body which are enervated by the lower spinal nerves, as well as other parts of the head and face. This has a bearing on obstruction also.

I appeal to the general practitioner to treat cases of acute cold and catarrhal conditions as grave conditions, not to pass them up and say: "You will be well in a week or two," and not do anything, and "Nature will heal you," and other phrases of that kind, which oftentimes are adopted. Treat these cases until such time as you are sure there are no symptoms which will be of grave consequence. Treat them just the same as you would treat a pain in the belly, as being a grave symptom, until you have demonstrated or found out that it is not a symptom from a serious condition. So therefore the conclusions arrived at are these: That the referendum to and the recall by the human organism cannot be initiated until this blockade of the nasal cavity is raised. This brings me to the conclusion in the opinion that I wrote to Doctor Magruder that the most serious general condition caused by the deviated septum is a more or less vicious lowering of the whole human economy.

**Dr. Robert Levy, Denver:** I should like to say, briefly, one or two words. In the first place, the reader spoke of the relation of the deflected septum to pulmonary tuberculosis. A

number of years ago the late Doctor Solly was the first, I think, to call attention to the importance of proper nasal breathing in cases of tuberculosis, and you all know how we revered his opinion, based as it always was, upon careful clinical findings. I have since then confirmed many of the statements made by Doctor Solly in his original paper on this subject in studying tuberculosis cases in sanatoria, and I am satisfied that one of the indications for correction of deflected septa is found in tubercular patients, the condition of the patient in general warranting operation, of course.

The essayist does not agree apparently with the statement made by a great many that hypertrophied turbinals are the result of deflected septa. I believe he leans—at least, I gather so from his remarks—rather to the causation of deflected septa by enlarged turbinates. I am satisfied if the Doctor will carefully look over the record of his cases—cases that he examined early in life—he will change his opinion. We see great numbers of deflection in children; the deflection is not very great, but it is pronounced, associated with a certain amount of hyperemia of the turbinals. As time goes on the deflection becomes more pronounced and the congested turbinal becomes a hypertrophied turbinal. Now, what has taken place? The original cause of the congestion of the turbinal was the difficulty with which the patient breathed through the nose. In other words, as the patient inspired there was a suction force exerted from behind in the effort of the patient to produce a proper inspiratory effort, causing as a suction pump would, a hyperemia of the structures. The hyperemia continued then to a certain extent becomes eventually a hypertrophic change. That is the pathologic sequence, and so a small deflection may by producing congestion lead to hypertrophy, thus being the direct cause. You will see if you examine a case like that indicated in the diagram that there is a marked compensatory hypertrophy on the concave side. On the other side there is atrophy, possibly from pressure. The pressure of the turbinal here, according to Doctor Magruder, is the cause of the deflection. On the contrary, I believe that the large cavity on the concave side is the cause of the hypertrophy.

**Dr. W. V. Mullin, Colorado Springs:** Doctor Magruder said probably the correction of these septi helped asthma. These cases do not come to operation until the septum has given the patient a great deal of trouble, and so I think that after correcting a septum like this shown on the chart with hypertrophy of the turbinates and engorgement on this side, that you will have to go a step farther and remove a portion of the hypertrophied middle turbinate, but I believe a final operation will invariably help the asthma. I do not mean dyspnoea; I do not mean cardiac asthma or renal asthma, but I mean the typical asthma.

I agree with Doctor Levy that after correcting this deformity, the hypertrophy of the turbinates will go down, unless it is of long standing, and then the hypertrophy and inflammatory thickening may keep up, and in that

event you may have to take a piece off of the turbinate to relieve pressure and give drainage to the sinus.

**Dr. Charles A. Ringle, Greeley:** Doctor Magruder's paper has been very interesting, and I appreciate it very much. I regard the deflected septum as the one condition in the nose above all others which needs attention for the relief of all catarrhal conditions, including the milder forms of sinus troubles. In order to make the relief complete, Doctor Magruder mentions that a complete operation should be done, with which I agree. The operation should be extended as high and low as the deviation is found and clear back to the sphenoid, if necessary, because we find we have deformities extending in all directions. In regard to hypertrophy of the turbinates I have often observed hypertrophy of these bodies attending a deviated septum, and I believe that hypertrophy of the middle turbinate is far more mischievous and pernicious in its effect than hypertrophy of the lower turbinate, and, furthermore, I believe that we not only have hypertrophy of the mucuous membrane of the middle turbinate, but the conditions causing hypertrophy of the mucuous membrane also brings about an overgrowth of osseous tissue with the development of cystic structures. These cystic structures of the middle turbinate cannot be expected to undergo resolution, but instead they will remain obstructive unless they are reduced in some other manner, and it is often of considerable importance, to reduce them by amputation of the anterior portion of these structures.

#### DISCUSSION CLOSED.

**Dr. Alexander C. Magruder, Colorado Springs:**

I expected to go into the matter of anaphylaxis and asthma at this time; but time would not permit. I want to correct myself so far as Doctor Levy's statement is concerned. I believe, with Doctor Levy, that hypertrophy of the turbinates is secondary to the deviation. I have probably given a wrong impression. There is one thing more that I should like to call attention to, and that is the face and hat veil worn by women: It may not seem to be connected with the subject, and yet at the same time it is. The large hats that are worn now to conform to fashion's dictates, and even the smaller automobile hats, necessitate the use of a veil. Numerous women have told me that it was absolutely necessary and imperative that they swallow large quantities of mucus from the nose because they were not able to untie their veils, expectorate, and get rid of the mucus in that way.

#### THE FIRST ANAESTHETIC.

And the Lord God caused a deep sleep to fall upon Adam; and he slept; and He took one of his ribs and closed up the flesh instead thereof.—Genesis ii, 21.

## RECENT ADVANCES IN CEREBRAL LOCALIZATION\*

BY GEORGE A. MOLEEN, M. D.,  
DENVER, COLO.

To be able to accurately localize lesions of the brain has been the dream of neurologists for many years.

A discussion of the researches made in the last ten or fifteen years, and the views which have withstood the test of criticism, would far exceed the time allotted and I shall therefore endeavor to lead up to and touch upon the most important of them. Likewise, to limit one's remarks to the recent advances or discoveries would be to impose a mass of intricate detail, possibly more or less incomprehensible, were it not preceded by a brief tracing of the lines which have lead to the more important and modern views. It is hoped, then, that the endeavor to add interest in a general way may be accepted as justification for the review of what may seem to be accepted or generally known.

The possibility of determining the exact location of a disease process, tumor or foreign substance, through a study of the clinical manifestations, so precisely as to permit of it being attacked through a small opening in the skull is, aside from its physiological significance, an achievement worthy of the most persistent effort. The point to which this ability has progressed today so far precedents all previous conceptions of the function of the human brain as to justify a feeling of pride in the accomplishments of our profession.

Prior to 1861 the doctrine of Flourens was commonly accepted. In this, the brain was recognized as the seat of the higher mental faculties; that they were evenly distributed, not localizable and acted as a

\* Read at the annual meeting of the Colorado State Medical Society, September 25, 26, 27, 1912.



whole. At about this time Broca published several cases of aphasia with autopsies in which he positively localized the motor speech center in the left inferior frontal convolution, which has since borne his name; and while this has not been lightly shaken during recent years by Marie and his followers, it nevertheless marks the starting point in the study of cerebral localization.

The names of Hughlings Jackson, Fritsch, Hitzig, Ferrier and Monk are familiar to all who have taken up the trail of localization in the brain so well blazed through their indefatigable and life-long efforts.

With the recognition of the contralateral representation of muscular movement in the Rolandic area, many workers all over the world sought to map out the exact boundaries of the various muscle groups through the study of disease effects, animal experimentation, extirpation of areas and Faradization. These maps, however, have varied and have continued to vary in the exactness of their boundary lines.

At first it was supposed that the so-called motor cortical zone contained cells which excited individual muscular action, and they were accordingly named "motor" cortical cells. Later, it was found that with the loss of motion there was frequently a loss of sensation, and in other instances the sensory symptoms were more predominant, which led to the view that the area was a representative center for the sense of motion as well as that of motion, and the term "kinesthetic area" was introduced by Bastian.

That the Rolandic region was an "excito-motor area" was then displaced by the view that its function was devoted to the recording of the memories of motion-motion pictures, as it were. This view, with some modifications, is the one generally accepted at the present time.

It is important, however, to note that Bing (1) still adheres to the sensori-motor zone while Purves Stewart (2) states "it should be particularly observed that the motor areas in the pre-central convolution extend back as far as the Rolandic fissure, but not behind it, as was formerly taught." He has to say further: "not only by experimental stimulation in anthropoid apes (as shown by Sherrington and Grünbaum) and in certain cases in man, but also by histological research (according to Campbell and Brodmann) it has been shown that the posterior wall of the Rolandic fissure differs in function and structure from the anterior or motor wall."

In 1909, Harvey Cushing (3) stated "it would thus appear, as is so often the case with disputed points, that there is an element of truth on both sides; for the original "motor area," embracing the convolutions on each side of the central fissure, appears to be sensori-motor, though not in Monk's sense; namely, with coinciding or superimposed afferent and efferent stations."

There can be no doubt but that lesions of the precentral convolution can cause motor disturbances without recognizable sensory loss; on the contrary, a lesion limited to the post central gyrus will almost inevitably inhibit normal free movements.

In the case of a young Japanese observed some years ago in the Denver County Hospital, who, in falling from a street car, was struck on the right side of the head by the step. No loss of consciousness. There was a desire to sleep continuously, but he could be readily aroused. There was no paralysis but the finer movements could not be performed with the left hand—such as accurately and rapidly approximating the thumb and each finger of the hand; there was but slight diminution of the grasp as shown by the dynamometer when thoroughly roused. There was some loss of muscular sense and diminution of



tactile sensibility up to the elbow. There was swelling and emphysema of the scalp, under which a fracture was found without depression. Upon opening the skull over the arm area, the dura was found intact which, when incised, disclosed a clot about the size of a filbert, posterior to the central fissure.

The cells which had been regarded as excito-motor, i. e., as generating impulses leading to muscular contraction have, as a result of improved methods of staining, been shown to subserve a nutritive function since the neuro-fibrils do not terminate there but pass through to a reticular network beyond.

Time will not permit of more than mention of the important information regarding localization gained through the study of the myelinization of the cortical fibres by Flechsig, and the lamination of the cortex by Campbell, Head, Brodmann and Bolton, in the human embryo as well as in the monkey. These studies have alike shown changes in those tracts and areas upon the assumption of function.

More posteriorly in the parietal lobe are the areas for the registration of general sensation and notwithstanding the opposition, there seems to be good reason to believe with Mills that the superior parietal lobule is concerned with the stereognostic sense, or the ability to recognize objects by their form when placed in the hand and the eyes closed.

In discussing a case of tumor of the right inferior parietal lobe with left astereognosis, Edwards and Cotterill (4) believe that the value of astereognosis as a localizing sign of lesion of the parietal lobe to be well established.

A boy of 19 years of age, observed in 1906, had been treated for epilepsy and for several years presented a marked astereognosis in that he was at a loss to recognize any object placed in his left hand and later, a blindness of the left half of

both visual fields. A cyst was found in the upper and posterior parietal region which communicated with the lateral ventricle. At the time of operation, the entire upper part of the parietal lobe was replaced by the cyst and an internal hydrocephalus was present.

That the visual centers are located in the occipital lobe on either side of the calcarine fissure, can no longer be doubted. A destruction of this area in either hemisphere results in the blindness of the opposite half of the field of vision. Limited lesions occupying the area on one side or other of this fissure have caused segmentations of the field (quadrantic.)

The association visual areas are in the supra-marginal gyrus in the posterior part of the parietal lobe. Here lesions result in the loss of the recognition of objects seen—"mind blindness" or "object blindness." This, with the posterior end of the superior temporal convolution which has to do with the understanding of sounds heard, comprise the chief centers concerned in the production of sensory aphasia.

It is interesting to state that the left angular gyrus has a special function; namely, the center for the recognition of the meaning of written signs, of "letter pictures"—a center, as Bing (5) states, which has close relations not only with the visual cortical area, but also with the cortical area for the understanding of speech. Lesions of the angular gyrus cause, therefore, alexia (word blindness), sometimes inability to read and also conjugate deviation.

Loss of the power of speech is still one of the moot points in its localization. Since Marie denied the existence of a motor speech center in the base of the third frontal convolution (Broca's center), his views have been vigorously attacked, especially by Dejerine, Oppenheim and others; nevertheless, it must be admitted that Marie's opinion is gaining in favor. This

author contends that many cases are found in which aphasia is present and the third frontal convolution was found intact. Contrariwise, there are cases in which aphasia was not present (in right handed individuals), the base of the left inferior frontal convolution was found destroyed. He insists that where right hemiplegia occurs in right handed individuals, the intelligence is so lowered as to be the important factor in the production of aphasia.

It is interesting to follow the frequent association of acromegalia with lesions of the pituitary body. Tumors in the gland are often recognized through this fact and the peculiar alteration in the visual fields; namely, the bitemporal hemianopsia, which results from pressure of hypertrophy or tumor upon the optic chiasm. Skiagrams of the head almost invariably show enlargement of the sella Turcica.

Economo (6) has shown that the fibres for the sensation of temperature and pain must be lateral to the sixth nerve and in the lateral part of the median fillet, whereas the fibres of touch and deep sensation must be chiefly in the median part of the median fillet between the sixth nerve and the raphe.

Pain produced by a central lesion, he has shown, may result from implication of the pain fibres below the optic thalamus.

Pupillary phenomena have afforded considerable interest in that they have shown that the radiating fibres of the iris are excited through centers in the cervical cord, while the circular or constrictor fibres are actuated through a center contiguous to that of the third nucleus, and that this center differs from the other portions of the *motores oculares* nucleus histologically, and that it is in free communication with the sympathetic system by way of the ciliary ganglion, which is also consistent with the unstriped character of the muscle supplied. Its separation from the dilator center probably accounts for the frequent

finding in one or other lesions of the hemisphere, wide dilatation of the ipso-lateral pupil.

Lesions of the cervical cord, on the other hand, and of the cervical ganglia of the sympathetic, as well as lesions of the Gasserian ganglion, if irritative in character, cause dilatation of the pupil on the corresponding side; while destructive lesions cause contraction of the pupil.

It is well to keep in mind that when these changes are due to the paralysis of an antagonist, the action of that antagonist is lost; e. g., paralysis of the constrictor fibres causes dilatation but no stimulus will cause even slight contraction; while irritation of the dilator fibres causes dilatation but under reflex stimulation, contraction may be excited.

Lesions of the frontal lobe, according to Kennedy (7), present as a definite sign in the presence of expanding lesions, such as tumor or abscess, a symptom complex, consisting of a true retro-bulbar neuritis with central scotoma and primary optic atrophy on the side of the lesion, together with choked disk in the opposite eye. There may be only a bilateral choked disk early, but sooner or later there will be pressure directly on the upper surface of the optic nerve and degeneration of the macular bundle, when consequent central or para-central scotoma will develop. Loss of smell on the affected side is almost invariable.

Lesions of the corpus striatum are to be recognized by a combination of spastic diplegia, bilateral athetosis and pseudobulbar paralysis. According to C. Vogt (8), who also calls attention to the resemblance of this syndrome to many cases of paralysis agitans in which lesions of the corpus striatum have frequently been described. With lesions of the parietal lobe, Bianchi (9), has convinced himself that a distinct symptom complex exists; namely (a) More or less rapid and complete disappearance of the paralysis a certain length of time

after the stroke. No exaggeration of the tendon reflexes. Babinski's sign is absent. (b) Hemianesthesia and loss of the stereognostic sense are almost constant. (c) Hemianopsia is frequent. (d) Alexia, agraphia or dysgraphia are constant. (e) Word deafness is absent and paraphasia is rare. (f) The patients can repeat phrases spoken to them but cannot write spontaneously nor copy. (g) Dissociation of thought, only in certain cases; patients who read and write show more disturbance in intelligence than illiterates.

In diseases of the cerebellum, the work of Bárány (10) on vestibular irritation finds important application. He describes two methods of examination; first, the investigation of the equilibrium of the body, and second, the movements of the extremities during vestibular irritation. He states: "If a man has by any disease of the labyrinth a strong rotary nystagmus to the right he will fall to the left on assuming the position for Romberg's test; if maintaining this position and the head is turned 90° degrees to the left, he falls backward; if the head is turned 90° degrees to the right, he falls forward. This is the law characteristic for the vestibular disorders of equilibrium which I have detected." He finds the same individual variations as to degree in disease as in the normal during experimental disturbance of equilibrium.

"In cases with cerebellar disease we observe spontaneous disturbance of equilibrium which, at first sight, is just the same as in vestibular disease. But there are very important differences if examined exactly. In cerebellar disease there is (a), no connection between the mostly present spontaneous nystagmus and the direction of falling. The patient may have nystagmus to the right—after the rule—and should fall to the left, but he really falls to the right. (b) The influence of the position of the head upon the direction of

the fall is absent. Change of position of the head does not change the position of the fall."

"I have always tested the experimental nystagmus and its influence upon the falling. Syringing with cold water often produced quite normal nystagmus but the influence upon falling was abnormal. If the left ear was syringed with cold water a strong rotary nystagmus to the right occurred, but the patient did not fall to the left but fell forward. Turning the head 90° to the left did not make him fall to the backward, but he still fell forward. If I can produce a definitely abnormal reaction, I make a diagnosis that a disease of the vermis of the cerebellum is present."

Babinski has studied the influence of the galvanic current on the vestibular apparatus. A current of 30 to 35 ma. is applied anterior to the antitragus when, in the normal individual, on closing the circuit the head is moved in the direction of the positive pole. In disturbance of this apparatus the reaction fails on the affected side.

In a case of Meniere's disease observed by the writer there was an absence of the latero-pulsion on the affected side.

Considerable interest is attached to lesions at the angle formed by the cerebellar peduncles and the pons Varolii—the so-called cerebellar pontine angle, since tumors in this region may now be definitely localized and differentiated from tumors in the cerebellum. The brilliant result of a recent case of Starr's (11), in which the tumor was accurately localized and removed by Cushing. Complete recovery followed, including the vision which had been reduced to 20/70.

As in tumors of the cerebellum, the headache, vertigo, vomiting and choked disk generally appear early. The localizing symptoms are divided into three classes: 1, those referable to the cranial nerves; 2, those attributable to involvement of the



cerebellar peduncles; and 3, those as a result of the compression of the tracts passing through the pons.

Of the cranial nerves are the sensory portion of the fifth (sensation of face—cornea), sixth (nystagmus—internal strabismus), seventh (weakness of the same side of face—orbicularis), eighth (tinnitus—deafness—subjective vertigo), ninth (dysphagia—hoarseness), tenth (vagal attacks—rapid pulse—flushings—faintness without loss of consciousness), twelfth (paresis or paralysis of the tongue).

The involvement of the cerebellar peduncles include those which characterize cerebellar lesions—staggering gait, extreme ataxia, vertigo, alteration of muscular tone.

Lastly, the pressure upon the tracts passing through the pons manifests itself by loss of motor power on the opposite side of the body, with the signs of interference with the function of the pyramidal tracts. The knee jerk is exaggerated and is rendered more evident inasmuch as this reflex is usually lost on the side of the tumor. Sensory loss is less common.

Time will not permit discussion of the views regarding the aphasia and the attending mental impairment as an obscuring factor as well as other syndromes regarding which some controversy exists.

It may be said in conclusion that at one time the component parts of a neurologist seemed to consist of a pin, a pledget of cotton, an electric battery, iodide of potassium and morphine. The advances of diagnostic methods of today have kept pace with other branches of medicine and with the aid of our brother surgeon and improved methods of technique, few fields remain in which surgical intervention is not promising. Only recently a hemiplegia resulting from hemorrhage to the internal capsule recovered, following removal of the clot by surgical means.

Accurate localization is the chief aim in the nervous system as elsewhere; the na-

ture of the lesion stands next, and these accomplished with corresponding enlightenment in the domains of therapeutics and modern surgery, recovery in many conditions now regarded hopeless may be expected, and there is good reason to believe that the pennant of the attacking forces which we represent will be well advanced in the field of action during our lives.

325 Mack Block.

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#### THE FRIEDMANN "CURE."

PHILIP HILLKOWITZ, B.S., M.D.

"Doctor, what is your opinion of the new cure for consumption?" is the question put by every layman to his medical acquaintances.

What answer can one give?

From the maze of conflicting reports and sensational statements of the yellow press it is, of course, impossible to gain any semblance of an unbiased conclusion. The blatant publicity given to a remedy whose merit still awaits the verdict of the future, is apt to prejudice the ethical practitioner against it in spite of any possible virtue it may possess. We are still further handicapped by absence of a detailed scientific report from the reputed discoverer giving precise information regarding the cultivation of his avirulent tubercle bacilli, the properties and mode of administration

of the virus and a thorough clinical report of the cases treated.

All the authentic information which is available to the physician is contained in the original article by Dr. Friedmann and the stenographic report of the proceedings of the meeting of the Berlin Medical Society, before which the paper was read, all of which was published in Nos. 47 and 49 (1912) of the *Berliner Klinische Wochenschrift*.

The original contribution of Dr. Friedrich Franz Friedmann was presented at a meeting of the Berlin Medical Society, held November 6, 1912, under the title, "Curative and Preventive Vaccination in Human Tuberculosis."

In order to give the medical reader a fair idea of the rationale of Friedmann's remedy and let him draw his own conclusions, we shall translate literally the most salient points of his address:

"Almost a quarter of a century has elapsed since the discovery of Old Tuberculin. The preparations recommended by Koch himself, as well as the numerous other products derived from cultures of the tubercle bacillus all possess a kernel of truth and produce a similar effect. It has long been recognized that the foundation of all therapeutic research in tuberculosis is based on the fact that the antigens reside in the exciting cause. Efforts have been made to obtain the active substance in a pure state, employing the most diverse methods, by chemical, thermic, mechanico-physical or biological treatment of the cultures. In all these procedures, however, the original material used was a virulent, highly toxic culture of human or bovine tuberculosis. In spite of all attempts to deprive them of their toxicity by special processes they naturally brought about considerable damage to the organism. Moreover, as a result of these severe procedures, the extremely labile antigens present in the bacillus, i. e., the substances capable of

producing the specific antibodies, were seriously injured. The problem resolved itself into finding a remedy which should possess all the possible specific properties of the germ outside of its toxicity and virulence and which should be perfectly harmless even in large doses. It must therefore be an avirulent, atoxic bacillus. But this avirulence, this freedom from pathogenic properties, must not be arrived at by any injurious treatment of the cultures; it must be a bacillus which is naturally avirulent; it must be avirulent and atoxic both in the tuberculous and the non-tuberculous individual. It must therefore be a living bacillus. . . .

Now, there are tubercle bacilli and tubercle bacilli. One strain is not like the other. I have tried various and sundry avirulent cultures but have quit them all as the therapeutic results were not encouraging. All this was changed at one blow when I began to employ for therapeutic purposes a strain of avirulent tubercle bacilli which I had obtained several years ago, but which only recently had been completely altered in its action. At first this strain was still unadapted to therapeutic use on man. Only after I succeeded in removing the last traces of virulence by proper transplantation and passage through animals did I employ the preparation on the human. First, I repeatedly injected myself, then adult tuberculous persons, and finally, a long time afterwards, I used it on children in preventive inoculations.

Up to the present I have treated 1,012 people. I would encroach too much on the time allotted me were I to go into details of preparing the virus, as regards selection of culture media, age and kind of cultures, the further elaboration and the dosage: suffice it to say that it is only by a proper maintenance of all these factors, gained by many years of patient labor, that success is assured. . . .

The treatment consists in intra-muscu-

lar injections, repeated at long intervals, once twice, thrice; seldom more. Success or failure depend on the complete absorption of the virus. An infiltrate must form at the site of injection, from the size of a nut up to that of a small apple, which gradually disappears in the course of the ensuing weeks or months.

Only when the injected remedy is entirely absorbed and remains in the body do the specific curative effects appear, and that usually very soon, in the most remarkable manner, and they continue to manifest themselves.

We often see as the result of a single injection, bone and joint fistulae of many years' standing close up and heal, serofuloderma to be covered with young and healthy skin, large, hard glands considerably diminish, tuberculous abscesses cave in and cicatrize, chronic serofulous eczema heal completely and last, not least, those afflicted with phthisis freed from all their complaints and physical signs of disease.

If, however, resorption of the preparation is incomplete, if the infiltrate persists or liquefies, healing does not ensue, nor will a fresh injection help any. Hence, my previous failures, or partial cures in many cases. . . .

I found that in cases where the Von Pirquet reaction was negative, or almost so, in cases of phthisis of a progressive type, in severe or multiple tuberculosis of the bones in hematogenous tuberculosis, there was a complete and rapid absorption from the first injection with but slight infiltration. It was only after the second or third injection in such cases that the specific reaction appeared in the form of a large infiltrate. If, however, the cutaneous reaction is strongly positive and the case is one of severity, then a subcutaneous or intra-muscular injection alone will not produce a perfect result.

After intravenous inoculation, which is harmless even in large doses, there is an

immediate success with rapid healing, soon followed, however, by an arrest of the healing process. I therefore thought of the advantage of combining both methods of inoculation. The results of the "simultaneous method" were such that abscess formation was entirely avoided, beautiful infiltrates form which are slowly absorbed and the healing process is therefore correspondingly improved."

The essayist then presents cases of bone and joint tuberculosis that were cured by this virus, and also cites cases of glandular tuberculosis that was eradicated after one injection.

As regards pulmonary tuberculosis, Friedmann says: "Where the process is not too far advanced they show almost without exception after resorption of the remedy, a disappearance of the symptoms. It is self-understood that moribund cases with large cavities in the lung complicated perhaps with advanced laryngeal or intestinal tuberculosis or rectal fistula will not be saved by this remedy. On the other hand, cases not too far advanced show without exception rapid and continuous improvement. The first symptoms to disappear are the annoying night sweats. So do a large number of subjective complaints."

Now follow cases of uro-genital tuberculosis and lupus with equally splendid results.

He then takes up the subject of preventive inoculation, which he practiced on 335 children, ranging all the way from one hour to five years in age.

The essayist concludes with an account of the animal experiments that he undertook with his virus.

The preparation is perfectly innocuous to guinea pigs but does not confer absolute immunity on them. While the guinea pig injected with tuberculous material ordinarily survives 103 days, after one pro-



tective injection of the virus the animals lived 363 days.

"Fortunately," Dr. Friedmann says in his concluding paragraph, "The conditions in man are much more favorable. For the human race natural infection from tuberculosis is not in the remotest degree as destructive as the artificial one for the guinea pig. Cures have taken place in man and we may therefore hope for immunization. Perhaps vaccination must be repeated once more in order to obtain complete immunity and life. These are questions of the future."

As was to be expected, the discussion that ensued is replete with interest. Dr. Erich Müller opened the discussion with a eulogy of the work of the essayist as evidenced by the splendid results of five of his cases of severe bone tuberculosis. He concluded as follows: "From my own personal experience I am very partial and full of hope for the further use of this remedy, both for therapeutic as well as for prophylactic purposes.

A written communication from Dr. Schleich was read telling of his good results with the Friedmann cure in surgical tuberculosis, although he had at first received it with skepticism. He considered it his duty to refer cases of this nature for treatment by Dr. Friedmann.

Now follows a long discussion by Dr. Karfunkel, who has a large polyclinic for tuberculosis in the most thickly-settled portion of Berlin, reporting the results of his observation on four hundred and fifty patients who were treated with this virus. From the results that were achieved he would no more think of treating a case of pulmonary tuberculosis by any other means than with the Friedmann preparation. Among 250 cases of phthisis he has not seen a single one which was not favorably benefited.

Similar laudatory comments are made by Dr. Küster and Dr. Heimann.

The first discordant note in the symphony of encomiums is sounded by Blaschko, who regrets his inability to report such remarkable success as his predecessors. He admits that his observations were taken at a time before Friedmann devised his simultaneous method and the formation of abscesses was the rule, with failure to heal. Nevertheless he reports a few good results in some cases, but not sufficient to pronounce a definite cure. Blaschko points out the difficulty of treating lupus on account of the super-susceptibility of the skin, even with the Friedmann cure. It is to be hoped that with the simultaneous injection a cure may be accomplished

[Dr. Friedmann: "Sure."]

Dr. Citron, a well-known serologist, and pupil of Wassermann, takes the floor: "All the researches of immunity in recent years have led to the conclusion that it was a mistake to attempt confer immunizing or curative powers by inoculating killed germs. They may be useful for diagnostic purposes but not for therapy. The great successes in immunity as aimed at by Jenner and Pasteur were achieved with the live virus, with Pasteur's vaccine; not with Wright's vaccine, which is killed bacterial matter. I therefore believe that the course pursued by Friedmann is the right one in principle. Now, while we recognize the correctness of the theoretical basis of his remedy, yet so long as we know nothing of the details of his method, we must maintain a certain degree of reserve towards it because we have learned from the history of immunity to gauge results cautiously.

"Pasteur, the greatest investigator of immunity in the past, lived to see a failure in his chicken cholera vaccination which at first had such brilliant success, but finally gave rise to enormous epidemics because the avirulent virus for some unknown reason became virulent. So long as we do not know the essence of virulence, so long as

we cannot change virulence at our will, so long as we may wake up some day to find that an avirulent virus has suddenly grown virulent—that long have we, who otherwise share Friedmann's line of thought in principle, hesitated to carry this line of reasoning into practice on the human being.

"When a number of recognized physicians report good results with this remedy, one who has had no experience with it must keep silent and await the future. But one point of caution: If it be permitted to treat severe cases of tuberculosis with this unknown and unmastered remedy we should still pause before attempting to inject into healthy children a living virus. There is a difference between an advanced case of phthisis and a non-tuberculous infant. *Dr. Friedmann should first of all clearly announce to the medical world what is his virus, anyhow.*"

Dr. Citron then asks him "whether the virus is that of a cold-blooded t. b. or human t. b. rendered avirulent. If the latter, its harmlessness must be rigorously assured. Now, Dr. Friedmann tells us that his experiments with guinea pigs have failed. [Dr. Friedmann: "No."] Pardon me, then I misunderstood you. [Dr. Friedmann: "Yes."] I understood that the guinea pigs eventually died. I would call that a failure. Perhaps it is only a difference in temperament between Dr. Friedmann and myself, but with such results I would go slow about it before using it for prophylactic purposes."

Follows a very interesting talk by Dr. Felix Klemperer on human and bovine tuberculosis and attempts by himself and other investigators to confer immunity as well as a cure by the use of tubercle bacilli of opposite origin: "I then mentioned my work to Dr. Robert Koch, who spoke thus: 'It is only a question of finding a tubercle bacillus non-virulent to man which can be injected alive, remain alive in him and not produce suppuration.'

"Later, in 1906 or 1907, Friedmann and myself made some experiments with the turtle bacillus, which he cultivated. We had to give up, because abscesses formed. If Friedmann is able to remove the suppurative effect of his bacilli and can keep them alive in the muscle or subcutaneous tissue, then I have no doubt of his success. The reports that have been given us are unquestionably colored by enthusiasm. I don't believe we have found the cure for tuberculosis and that tuberculosis will now be eradicated from the face of the earth as one of the speakers said. That some progress has been made, that we are in the presence of something serious, deserving our attention, this impression all of us have had. I simply desired to show that we are not dealing with something entirely new, but with a progressive, evolutionary step. The only secret, to me, of Friedmann's remedy, is: How does he deprive his germs of their suppuration-causing properties?"

Dr. Goldscheider asks for documentary reports which none of the speakers had given—the status before, during and after treatment, as well as further clinical details.

The meeting then adjourned to resume the discussion the following week (November 13, 1912).

Dr. Friedmann says: "I had previously tried the most diverse avirulent strains both from warm-blooded animals rendered avirulent by artificial means, as well as those arising from cold-blooded species. I had published a rather exhaustive report in 1903 on one of these, derived from a tuberculous turtle. Then, in 1904, I briefly reported of my successful cultivation of another turtle bacillus. The third one, on which I have not yet reported, is by nature very avirulent. It is entirely harmless to guinea pigs."

Dr. Kausch warns against excessive optimism, citing tuberculin and salvarsan as examples. He asks Friedmann, what about

mixed infection? Also whether his cases of surgical tuberculosis were picked, or were treated as they came.

Dr. Piorkowsky speaks of his familiarity with the first strain of the turtle bacillus. Of the third strain he hears today for the first time. Dr. Friedmann came to him in 1903 and asked him to obtain for him a pure culture from material taken from a turtle that died of tuberculosis at the Berlin aquarium. He did so, readily, and made sub-cultures. In the course of time the resemblance to human tuberculosis was so evident that he carried out experiments on frogs and turtles, feeding them with tuberculous sputum. In this way he obtained an organism identical with the Friedmann Strain I. He is firmly of the opinion that it was a human tuberculosis that underwent a modification in virulence in the passage through the turtle.

We omit the remarks of Dr. Aronson and Dr. Wolff Eisner, both greatly interested in immunity, to make a brief excerpt of the remarks of Dr. Bier: "I must confess that I obtained the impression that there is a decided curative effect but I have not seen a decisive case. They were all cases of fibrous type, which often heal spontaneously. I cannot, therefore, enter as a witness for the special effectiveness of this remedy."

Dr. Schwenk cites a case of uro-genital tuberculosis reported by Dr. Friedmann as having been cured, in which he not alone finds no cure but not even an improvement.

Dr. Friedmann, in his concluding remarks, says: "It is impossible at this late hour to answer in a few minutes all the speakers. I can reassure Dr. Citron that my avirulent cultures will not become virulent, as they are by nature avirulent and never have been virulent.

"To Dr. Goldscheider, who asks for documentary additions, I can reply that the enormous material on which I have to re-

port cannot be published in a short address, nor in the limits of a journal. In a special monograph I will give due account of every case reported here in a summary manner."

Now follow replies to all of the speakers, including Dr. Schwenk, with whom he takes issue on a matter of veracity as to the condition of the patient with bladder tuberculosis, claiming that Schwenk himself reported her cured.

Dr. Schwenk rises to a question of personal privilege, following Dr. Bier, who also had an altercation with the essayist. He says: "I was very much astonished when Friedmann came to me a few days before the Society meeting, and said to me the patient (whom he had not seen for some time) was cured. But I was still more surprised when Friedmann asked me to speak in favor of his remedy, telling me I shall be in agreeable company—mentioning the names of Bier, Schleich, etc.—which I, of course, refused."

The finale is amusing:

Chairman (to Dr. Friedmann): "Have you anything further to say?"

Dr. Friedmann: "No."

[Shouts of: "Exact details of the remedy!"]

Dr. Friedmann: "Why, I have already given them."

Chairman: "The gentlemen would like to have it again expounded clearly."

Dr. Friedmann: "I cannot make it any clearer than I have done: I told you that before."

Chairman: "But you will publish it in detail?"

Dr. Friedmann: "Certainly."

Chairman: "Very well, then, it will be printed."

This is all we know at first hand of the reputed cure, as embodied in the above address and discussion.

That there is a sub-stratum of virtue in it, that the reasoning and principle in-



volved are plausible, cannot be denied. Whether it will make good in practice is a question that cannot be answered. The secrecy in which it is still enshrouded and the vulgar press agency work that has exploited it are open to just criticism.

The crucial experiment with guinea pigs has not succeeded. We are justified therefore in awaiting the outcome with a skepticism if not hostile attitude.

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### AN ADDRESS.\*

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BY DR. ARNOLD STEDMAN, DENVER.

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Mr. President and Gentlemen:

What I shall present to you tonight will be reminiscent rather than historical, reaching back as it does across almost half a century to a period of which little written record was left of the personnel, the life or the performances of the medical men of the early Denver.

As this paper does not claim to be historical, I may be pardoned if I quote names very freely, also if I sometimes introduce the personal pronoun, as like Eneas when describing the fall of Troy, "I am telling of things 'most of which I saw and in many of which I bore a part.'"

To comprehend more fully the condition of things in Denver in the late 60's and early 70's we must first glance at contemporaneous conditions which obtained in the country at large at this period. A great war had just closed—an army, in fact two armies had just been disbanded and sent back to their homes and the pursuits of peace.

The transcontinental tide of migration from east to west, which began twelve years before the war, to California and the Pacific coast, was renewed and as De Tocqueville said: "The gradual and continuous

progress of the European races toward the Rocky Mountains has the solemnity of a providential event. It is like a deluge of men rising unabatedly, and daily driven onward by the hand of God."

To accommodate this tide the Union Pacific was constructed, and on the 10th day of May, 1869, its union with the Central Pacific was effected, giving a continuous rail route between the two oceans, but leaving Denver marooned, as it were, 106 miles from its nearest station, Cheyenne. The old stage route via Julesburg on the South Platte was abandoned, the U. S. soldiers, who had hitherto guarded the stages and stations from marauding Indians, were withdrawn; the station agents, their families and their stock deprived of the protection of the military, were obliged to vacate, which they did, leaving the stations with their corrals, bunk houses and stables to the rattlesnakes, the skunks and the gophers. A rich country destined not to be repossessed until after the lapse of half a score of years.

At this time the towns along the line of the Union Pacific were "booming." Cheyenne, Sidney, North Platte, all growing, hustling towns, while Denver was standing still, or possibly losing ground by reason of desertions to the growing towns to the north.

The old overland trail to St. Joseph and Leavenworth, no longer brought accessions to her population as heretofore, and those seeking new homes and coming by train stopped short of her gates.

The impetus to Denver's growth which had ten years before come through the rich discoveries in California Gulch, near where Leadville now stands, had subsided; the placers along Clear Creek which had also contributed to her growth were exhausted, and it seemed at this time, '69-'70, as if Denver had reached its limit and could be described as Byron described Scio, after its destruction by the Turks:

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\* Read before the Medical Society of the City and County of Denver at the first meeting in the new "Meeting Hall," Metropolitan Building, December 20, 1910.

"Thou sittest no longer a queen in thy bower,  
But a widow of sons and of daughters be-  
reft.

Yet despair not, forsaken one, still for thy  
dower,  
Lovely Scio, thy lands and thy beauty are  
left."

And Denver had her climate and scenery  
still left.

Such was Denver when I first saw it  
from the top of a six-horse Concord coach  
on a Sunday morning, April 9th, 1870.

A little meager looking town of perhaps  
4,000 people, squatted in the sand along  
both sides of Cherry creek; dust in the  
streets ankle deep, no lawns in front of  
the houses, no trees or shrubs, except such  
as grew naturally; the tall cottonwoods,  
down where the creek joined the Platte.  
No water, except such as was obtained  
from dug wells and no lights, except from  
the primitive kerosene lamps, it sat blink-  
ing in the bright white sunlight, or freez-  
ing in the occasional blizzard, or blinded  
by the periodical dust storms which came  
all the way from Long's Peak, without one  
bit of cheek or restraint, gathering not  
only force but abundant sand and dust  
from the bare, unwatered and sparsely  
covered country to the northwest.

The livestock interests seemed about all  
that was left to Denver for there was no  
farming or fruit raising then, in fact peo-  
ple scoffed at the idea of ever raising fruit  
on the sun-baked alkaline soil. There was  
a little market gardening in Bijou Basin,  
forty miles east of here, and some farming  
on the Divide, where more rain fell than  
in Denver. The community in town was  
poor, the stockmen on the outside ranges  
being about the only ones who seemed to  
be making money. The cost of living was  
high and while no one was rich (I believe  
not a man in Denver at that time could  
reach the hundred thousand dollar mark  
and not more than a score were worth over  
\$20,000), yet everyone seemed to be able  
to pay the big prices, and there were no  
beggars and no paupers. There were no

burglaries in those days, most business men  
sleeping in their places of business and  
of course having arms, and as everyone  
usually carried a gun there was very little  
quarreling or brawling, but an occasional  
shooting. Not many women were among  
the people seen on the streets, very few  
children and still fewer old people.

The city government consisted of the  
mayor, who served without pay; a city  
council and a city marshal, who with his  
deputies represented very effectively the  
police department.

The streets running nearest parallel with  
the Platte river were named as now, except  
Market street, which was originally McGea  
street, later Holladay, named for Ben Hol-  
laday of Overland Express fame.

From Cherry creek east, the streets were  
lettered. "Fourteenth" street was "E"  
street; "Fifteenth," "F" street, and so  
on. There were three drug stores, two  
firms (furniture stores) which did the un-  
dertaking business for the half dozen doc-  
tors and such gun men as chanced to "get  
their man," at odd times.

The list of physicians included two or  
three who had been connected with med-  
ical service in the army, but most of them  
were from civil life.

The surgical training in the army had  
made many men proficient in the art of  
operative surgery but singularly enough  
had added very little to the science of sur-  
gery as we know it today. In Germany,  
Virchow had already promulgated his  
"Cellular Pathology," but the researches  
of Lister had not yet been applied prac-  
tically in this country, but were later pro-  
mulgated as "antiseptic surgery," which  
was executed under carbolic spray.

The trained nurse was an unknown in-  
dividual, the nearest approach being the  
good women sent to the army to assist the  
Christian Commission, which was the name  
of a society backed by the northern church-  
es to aid and succor the sick and wounded

of the Union army. There was no regular training anywhere for nurses. This seems rather strange when we remember that fully ten years before Florence Nightingale had blazed the way by her devotion and energy in establishing a corps of nurses for service in the allied armies during the Crimean war. But a change for the little city was at hand.

On June 22nd, 1870, came the first train over the Denver Pacific from Cheyenne, and what an ovation it occasioned! By common consent a holiday was declared and everybody flocked to the platform on Twenty-second and Wazee street to see the train come in.

From that day the town grew wonderfully. A hundred people would arrive in a day, not tourists but emigrants come to stay, so that within a year the town had doubled and now claimed some 9,000 souls.

The completion of the Kansas Pacific in August of the same year added to this; also about this time a gas plant was completed, also the Holly system of water supply, the water for the city being taken from the Platte river by the pumping station located near the Fifteenth street bridge, and a short line of horse street cars was established.

The ditches at the sides of the city streets by this time contained abundant water from the big irrigating ditch, and cottonwood trees were rapidly planted along all the streets in the residence portion of the town, including the whole of Fourteenth, Fifteenth and Sixteenth streets, above Curtis.

In the winter of 1870-71 Dr. R. G. Buckingham and the writer of this paper met in the office of the former and planned to get the little band of physicians together to talk over matters of interest to the profession. A call was issued in our names and we found on meeting that there were seven who responded: Dr. R. G. Buckingham, who came to Denver in 1863; Dr.

W. F. McClelland, in '59; Dr. F. J. Bancroft, in 1865; Dr. A. L. Justice, in '67 or '68, and I believe Dr. E. C. Gehrung and David Heimberger, with the writer, were present at this first meeting, Dr. John Elsner (1866) being present at the organization meeting. This meeting was organized by the election of Dr. Buckingham President, Dr. Stedman Secretary, and took the name of the "Denver Medical Association." A fee bill was drawn up, which is the foundation of that in force today. A constitution was framed and by-laws adopted and the first regular medical organization in this territory was formed; the proper officers installed and records established.

This association continued its work for a period of about twenty years, giving attention to public health, to the hygiene of schools, the care of such hospitals as existed, and finally perished by a "felo de se" in the early '90s in order that the "Phoenix Act" of raising it from its ashes might add to the dramatic reputation of some of its ambitious members.

In the spring of 1871 a call was issued by the authority of the Denver Medical Association for a meeting of all the physicians in the Territory of Colorado to be held in Denver in September and form a Territorial Association. There was not a large number to summon but representatives of Central, Georgetown, Pueblo, Idaho Springs, Black Hawk, La Porte, Golden and Denver attended, to the number of about twenty-five, and thus was formed the Territorial Medical Society, which, re-incorporated in 1876, is the Colorado State Medical Society of today. With the rapid growth of the city in size and prosperity, other physicians came, so that at the end of the year 1871 there were nineteen practicing within this city.

The first hospital\*—St. Joseph's—was

\* The Rocky Mountain News of June 27, 1860, mentions the "City Hospital" on Nineteenth, near Larimer, conducted by Drs. J. F. Hamilton and O. D. Cass.—Editor.



located on Blake street, somewhere about Twenty-third, by Sisters of the Order of St. Vincent. It occupied the ground floor room of a little wooden store building about 22 x 40 feet, having perhaps ten cots; that was in 1871. Mother Josephine being the Sister Superior with only two or three assistant Sisters. I succeeded Dr. A. L. Justice in charge of this hospital after two years and continued with them for ten years, several years of service being spent in the present site.

The County Hospital's first home was established either by Dr. Elsner or Dr. Bancroft (which I cannot now determine) in a wooden building which was situated on the west side of Cherry creek, either upon or below Blake street, and later removed to present site.

St. Luke's Hospital was started in a somewhat pretentious summer hotel building on the North Side, or what is called Highlands. The building was later destroyed by fire and St. Luke's removed to its present location.

Mercy Hospital was started by the Sisters of St. Catherine on the second floor of a store building in California street, between Sixteenth and Seventeenth streets, and later moved to the corner of Detroit and East Sixteenth avenue, whence it moved to its present location. I have no data at hand of St. Anthony's and cannot now give its history.

The Steele Memorial Hospital was founded later by the generosity of Dr. H. K. Steele, who gave the last years of his professional life, without compensation, to the sanitation and hygienic care of the city, ably seconded by his aides, Dr. Henry Sewall and the late Dr. Wm. P. Munn.

The inception of the Medical School was in 1880, several physicians believing that young men, forced by their condition of health to come and remain here, who might wish to study medicine, should be given a chance to do so. They also recognized that

in the mountain towns and isolated places there were some quite reputable and competent men who, while regular had never graduated, but who would be glad to renew their studies and take a degree. For these and other cogent reasons the plans were laid to establish a school for medical instruction and graduation and the Denver Medical School was established. This school had an honorable record and its alumni and alumnae are now among our most honored physicians. The union with the University of Denver added the authority of a strong institution to its prestige.

The union later with its competitor, the Gross Medical College, which was founded in 1888, seemed advisable to both institutions and was effected in 1902. The later history is well known to you all.

In review of the history of the medical profession in Denver, I feel that on the whole there is much for thankfulness, much to be proud of.

While the doctor in politics has not been much in evidence, the doctor in civil life has always made his influence felt for good and for the right.

The above imperfect outline pictures of the profession in Denver sketches as well as I can without the records, the progress and status of the medical profession up to the close of territorial days in 1876.

From this time the ranks of the profession was rapidly filled and many came in the next five years who have left their impress, not only on the profession but on the city and state as well.

In this connection we would only mention those who have passed away—since it is a good rule not to Canonize the living—but the names of Buckingham and McClelland, of Bancroft, Steele and Denison, of H. A. Lemen, A. L. Justice and W. H. Williams, W. R. Whitehead and others who lived here in the '70s are names to conjure by, and to the older people bring

up memories of able professional work, of good deeds, of civic service in city and state, of fine citizenship and well spent lives. Such men deserve that their names be held in memory as in a "forted residence 'gainst the tooth of time and razure of oblivion."

And now in this noble and spacious hall dedicated from this time to the use and benefit of the medical profession of this city and county of Denver, I extend to you gentlemen, on my own behalf, and in the name of those who have gone before, the right hand of fellowship.

The twentieth century has brought to your hands without the asking what these men of the '70s saw in promise only and like Moses died without the realization. Serum therapy, aseptic surgery, the wonderful revelations of the microscope in physiology and pathology, were seen by these "as thro' a glass darkly," and all this along with the profoundest thought, the most worthy traditions, the widest experience of generations of able men is given you for your inheritance.

May you administer and utilize these great gifts as becomes your noble profession and prove yourselves worthy to be "the heirs of all the ages in the foremost ranks of time."

## Constituent Societies

### EL PASO COUNTY.

The regular meeting of the **El Paso County Medical Society** was held at the Antlers Hotel, Wednesday evening, January 8, 1913.

The following members were present, thirty-two in all: Doctors Boyd, Brown, Cooke, Mayhew, Neep, Bortree, Ferguson, Martin, Rothrock, Timmons, Gillett, Mahoney, Moses, Gilmore, Caseley, Mullen, Swan, Wilson, Goodson, Arnold, Trossback, Gilbert, McKinnie, Depyre, Bortree.

Paper—Doctors McKinnie, Mullen, Neep, J. H. Brown, Swan, Moses and Trossback.

The minutes of the last meeting were read and approved.

In the absence of Doctor Tucker, President, Doctor Boyd presided.

Report of Committees.—The Library Com-

mittee reported the cost of maintaing library for past year; that no new books had been added, and the following journals were taken during the past year: Archives of Pediatrics, Dietetic and Hygienic Gazette, Journal of Experimental Medicine, Journal of Infectious Diseases, Journal of Nervous and Mental Diseases, Journal of Hygiene (English), Journal of Laryngology, Rhinology and Otology, Journal of Medical Research, Berliner Kleinische Wochenschrift, Munschen Med. Wochenschrift, La Press medicale, La Semaine. medicale. The report was accepted.

No other committees reported.

A letter was read from Doctor Stough asking the Society for a certificate of good standing which was granted by vote of Society.

Program.—Doctor McKinnie gave his experiences in aneurism operations, describing two cases and the details of operation for aneurisms, discussed by Doctors Boyd, Mayhew, Martin, Mullen and Neep.

Paper on "Internal Secretions," by Dr. J. H. Brown, discussed by Doctors Swan, Martin, Moses, Boyd and Trossback.

"New Things in Surgery," by Doctor Mayhew, gave in detail the surgery of ptosis.

Committees for coming year announced by Doctor Boyd were:

Milk Commission, term expiring 1916—Doctors McConnell, Martin, Perkins and Mahoney.

Program—Doctors Loomis and McKinnie, President.

Social Entertainment—Doctors Gillett, Neep and Arnold.

Public Health and Legislation—Doctors Magruder, Morrison and Hoagland.

Librarian—Doctor Bortree.

The program not completed, was to be continued over to the next meeting.

Society adjourned. J. H. BROWN,  
Secretary.

### WELD COUNTY.

The regular meeting of the **Weld County Medical Society** was held in Greeley, Monday evening, February 3.

Members present: Doctors Reed, Knowles, Pogue, Hill, Thompson, Woodcock and Lehan. Meeting called to order by the President, Doctor Reed.

First paper by Dr. J. K. Miller of Greeley on "Injury Relics and Their Treatment," was very interesting and was discussed by Doctors Knowles, Pogue, Harmer and Reed.

The second paper, by Dr. A. L. Hill of Evans, on the "Inclusion Bodies in Scarlet Fever," was short, but shows the Doctor has been doing considerable work along this line, and we hope he will continue. Discussed by Doctor Pogue.

J. W. LEHAN, Secretary.

### PUEBLO COUNTY.

**Pueblo County Medical Society** met in regular session Tuesday night, February 4, President Adams presiding. There were twenty-three present.

Doctor Epler's resignation from the Public

Health and Legislation Committee was read and accepted.

The following rearrangement of committees was made:

Public Health and Legislation—Doctors Corwin, MacLean and Pattee.

Entertainment—Doctors Middlekamp, Peairs and White.

It was ordered that the 1912 dues to the Medical Library Association of Baltimore, Md., (\$10) be paid.

A motion was carried that the Librarian, Doctor Work, be instructed to investigate the advantages of membership in the Medical Library Association and report to the Society with recommendations.

The committee of five appointed to interview the City Commissioners made a partial report. The committee was continued.

The membership committee reported favorably on the application of Dr. Charles W. Thompson.

The Secretary and President were instructed to telegraph Senators Thomas and Guggenheim the Society's indorsement of the "Owen Bill."

A communication from Doctor Amesse regarding medical bills now before the State Legislature was read. A motion carried that this matter be referred to the Committee on the Public Health and Legislation with power to act for the Society. The Secretary was instructed to so inform Doctor Amesse.

The program of the evening was "X-ray as an Aid in Diagnosis," by Doctor Epler and Dr. E. Gard Edwards of La Junta. Doctor Epler presented a very valuable and instructive paper and continued his subject by some very excellent skiagraphs and pertinent demonstrations. Doctor Edwards opened the discussion and illustrated with another collection of negatives and prints.

The Society extended Doctor Edwards a vote of thanks and appreciation.

The Society adjourned.

J. H. WOODBRIDGE, Secretary.

#### EL PASO COUNTY.

The regular meeting of the El Paso County Medical Society was held at the Antlers Hotel, Wednesday evening, February 12, 1913; members present were thirty-two in all—Drs. Tucker, Brown, Arnold, Mayhew, Bortree, Mahoney, Wilson, Moses, Swan, Boyd, L. G. Brown, Morrison, Peters, Gilbert, Witter, McConnel, Reed, Madden, Gilbert, Hosmer, Rothrock, Lennox, Trossback, Neepier, McClanahan, Magruder, Welch, Grimmell and Grover.

The minutes of the last meeting were read and approved.

Mrs. Waxam of the Florence Crittendon Home of Colorado being present, the regular order of business was suspended to hear her. She described the work of the home and asked the endorsement of the Society that she may use for aid here from other sources. The following endorsement was granted her by the President, authorized by vote of the Society:

"Whereas, The work of the Florence Crit-

tendon Home of Colorado is most worthy and productive of great good in aiding unfortunate girls, we, the members of El Paso County Medical Society, give it our most hearty endorsement."

A letter was read from the City Council asking for our Society to appoint one member to become a member of the new Recreation and Amusement Commission. Its duty is to consider all matters pertaining to the welfare of boys and girls.

It was decided by vote of the Society that the President is ex-officio a member of this commission.

The applications of Doctor Stewart and Doctor Vanderhoof for membership were read.

It was voted by the Society to have the next regular meeting on the second Tuesday in March instead of the second Wednesday, owing to Captain Amundsen's lecture coming on the regular meeting night.

It was unanimously decided that Doctor Foster be given a luncheon by the Society on his visit here, and arrangements were left to the Entertainment Committee.

It was moved by Doctor Grover and seconded by Doctor Mayhew and carried by the Society that the Communion Cup was a common drinking cup and dangerous to the community.

The regular program, "Diagnostic Significance of Pain," by Doctor Arnold, was discussed by Doctors Swan, McConnell, Boyd, Mayhew and McClanahan.

Doctor Hosmer gave an interesting talk on the new theory of etiology of glaucoma, namely, that some changes were produced in the colloids of the fluids of the eye, making possible a marked increase in capacity of absorption of fluids from without, and mentioned much of experimental evidence and personal experience in causes of glaucoma; discussed by Doctors Neepier and Bortree.

It was decided by vote of the Society to continue the regular lunches at the regular Society meeting.

Society adjourned.

J. H. BROWN,  
Secretary.

#### COLORADO OPHTHALMOLOGICAL SOCIETY.

The regular monthly meeting of the Society was held on February 15, 1913, in the offices of Dr. W. C. Bane, Metropolitan Building, Denver.

Attendance, 20.

Doctor Black presented a young man whose left eye was suffering from a chronic iridocyclitis, resultant upon perforation of the cornea and lens by a piece of wire, the lens having later been extracted.

Doctor Sedwick presented a patient in whose left eye, otherwise normal and having normal vision, there was an anomalous white patch at the macula.

Doctor Libby again showed an albino girl who had been presented to the Society five years previously. The patient's intense photophobia had been overcome by use of amber



lenses, and this with correction of her astigmatism had not only much improved her vision but had enabled her to keep up with her class in school.

Doctor McCaw presented a boy of 8 years who had a bilateral coloboma of both the iris and choroid, the latter probably reaching to and surrounding the optic discs. There was marked nystagmus.

Doctor Crisp presented a patient who had had a severe blepharospasm, sequel to old trachoma, and whose general ocular condition, including the spasm, had been very greatly improved following operations by Doctor Bane on the nasal septum.

Doctor Bane showed an enucleated eye which contained what was probably a sarcoma of the ciliary body and demonstrated on the eye the effect of transillumination in revealing the presence of the tumor.

Doctor Bane demonstrated the action of a home-made sideroscope, consisting essentially of a delicately suspended magnetised needle, which was readily attracted to an eye containing a small piece of steel. The apparatus had been used in a case of steel perforation of the eyeball, in which, however, the fact that the fragment was embedded in the posterior scleral wall had made an attempt at magnet extraction unsuccessful.

Doctor Libby presented an eye which had had to be enucleated after failure to extract a piece of steel with the magnet. The foreign body had dropped from the upper part of the vitreous to close contact with the ciliary body below, and had become so firmly fixed in a mass of purulent exudate that the magnet had not moved it.

Doctor Jackson showed a gross specimen, and also microscopical sections prepared by Doctor Crisp, of an eye which had been enucleated on account of intraocular tumor which proved to be a spindle-cell sarcoma of the choroid.

Doctor Jackson showed a number of illustrations from the literature of an angiomatosis of the retina recently described as a disease entity by Von Hippel.

Doctor Bane thereupon produced from his records a drawing made in 1895 of a case of precisely the same character as those referred to by Doctor Jackson.

Doctor Patterson reported a case of probably metastatic iritis secondary to a pneumonia. The patient, a boy of 9 years, first had an epidemic cold, which was complicated by mastoiditis. The mastoid abscess was cleaned out, and pneumonia frankly developed on the following day. When the patient was seen one hour before death there was bilateral iritis with abundant exudate.

WILLIAM H. CRISP, Secretary.

#### LARIMER COUNTY.

March 5, 1913.

Met in the Y. M. C. A. Building. There were present Doctors Hoel, Dale, Kickland, Taylor and Stuver. The minutes of the last meeting were read and approved. A letter was read

from the Committee on Red Cross Medical Work of the American Medical Association requesting that our Society appoint a committee of five, of which the President and Secretary shall be ex-officio members, to assist or co-operate with the Red Cross in rendering assistance in case of local emergency or disaster.

It was moved by Doctor Kickland and seconded by Doctor Dale and unanimously carried that such a committee be named and that the President appoint the other three members. This he did and the committee for the Larimer County Medical Society consists of: Doctors Kickland and McHugh of Fort Collins, J. G. McFadden of Loveland and Doctors Hoel, President, and E. Stuver, Secretary. The application of Dr. C. F. Wilkin of Laporte for membership in the Society was then presented and he was unanimously elected a member.

Doctor Taylor then presented his subject for the evening, "The Prescription Files." He had examined the files of two of the leading drug stores to find out the extent to which proprietary preparations were being prescribed by the physicians of Fort Collins. He found a large percentage of such prescriptions, and in the case of some of them pointed out evils both to the profession and the public of such prescribing. The paper was commended and discussed by all the members present.

Adjourned.

E. STUVER,  
Secretary.

## News Notes

Dr. Robert Levy went to St. Louis last week to read a paper before the local medical society.

Dr. Henry Pahlas, chief resident physician at the Hospital of the City and County of Denver, was married, February 28, to Miss Bertha Ping.

Dr. Lorenzo Lockard was confined to his home for about two weeks in March with an attack of appendicitis. He is now able to resume his work.

Dr. W. A. Evans, who has received such generous advertising as an expert in matters of health, was in Colorado about two weeks ago. He delivered lectures in Denver and Colorado Springs. The Denver County Society entertained him at one of its noon-day luncheons.

Dr. John B. Ekeley, professor of chemistry at the State University, was called as an expert witness in the Hyde trial at Kansas City.

Dr. E. L. McKinnie of Colorado Springs died February 14 at Los Angeles, Cal. He was 64 years old and practiced medicine with his son, Dr. L. H. McKinnie.

Governor Ammons has appointed A. W. Scott, a druggist of Fort Collins, H. F. Merryweather, an engineer of Denver and Dr. L. G. Crosby of Ouray as members of the State Board of Health. The retiring members are Dr. C. S. Morrison, Dr. W. C. K. Berlin and Dr. James Rae Arneill.

Dr. and Mrs. J. G. Hughes of Greeley celebrated the fifteenth anniversary of their wedding with a dinner party on February 22. The guests were the doctor's medical friends and their wives.

After a residence of a year in Colorado Springs, Dr. C. L. Orr has resumed his practice in Alamosa.

On March 8, Dr. Benjamin H. Mathews and Miss Anna Lyman were married.

Dr. Samuel W. Hart died in Seattle, February 5. Dr. Hart practiced surgery in Denver for a number of years. He came here from a large practice in the northwest in search of health but returned, discouraged, to Seattle. He graduated from the College of Physicians and Surgeons of Baltimore, in 1885.

Dr. Bon O. Adams and son, Donald, of Pueblo, Colo., left February 8 for New Orleans, expecting to visit in New York, Philadelphia, Chicago and Rochester before returning.

### MYELOID LEUCEMIA.

P. N. Panton and H. L. Tidy state, in the *Lancet*, May 18, 1912, that the average duration of this disease in its chronic form is only fifteen months from the time of coming under observation in the fatal cases. In a small percentage of cases the immediate cause of death may be an intercurrent affection. Death may occur by failure of the erythroblastic function of the marrow, and the presence of severe anemia with large numbers of nucleated red cells in the blood is of grave prognosis. The more usual mode of death would seem to be by exhaustion of the leucoblastic tissues, as evidenced by the decreased production of leucocytes and the immaturity of the type produced. Treatment by arsenic and X-rays produces no alteration in the condition, or brings about a remarkable though temporary improvement, or in some cases appears to precipitate the fatal issue. The most interesting blood change observed in the author's cases was the replacement of the typical granular cells by non-granular myeloblasts shortly before death. The myeloblasts are present in the stage of compensation, but in small numbers; they may come to outnumber all the other varieties of cells. The large type of myeloblast can be differentiated by Leishman's stain from other non-granular cells. The highest percentage of this type recorded in the author's series was thirty. In another case the percentage was 95, but a proportion of these cells were either intermediate in size or of the small type. The appearance of myeloblasts in large numbers is of importance, not only because of the grave prognosis associated with their increase, but also from the point of view of the relationship between the two leucemias. The fact that a typical myeloblast can be differentiated from a typical lymphocyte does not negative the view that one cell is derived from the other. The numerous intermediate cells which are found connecting the myeloblast with the polynuclear neutrophile suggests that the latter is derived from the former. The cases described by the

authors as acute might have been acute only in their termination. They could obtain no evidence, however, of any prior chronic condition in any of the cases, and their clinical condition was scarcely suggestive of chronic myelemia even in its terminal stages. The absence of marked splenic enlargement in the acute cases suggests a failure of any protective action of the spleen. The leucopenia present in one case, in spite of the overproduction of red marrow, is difficult to account for, and in two cases the type of leucocyte present was remarkable. The condition of "hyalemia" present in two cases almost exhausts the possibilities of leucocytic blood changes, and has an important bearing upon the knowledge of the source and mode of production of this cell.

### SALVARSAN.

J. Collins and R. G. Armour, New York (*Journal A. M. A.*, June 22), publish the results of their investigation on the effects of salvarsan in the nervous disorders caused by syphilis. The diseases studied were tabes, paresis, certain forms of myelitis, myelomalacia, encephalomalacia, meningitis, endarteritis, and gummatous formation. Assuming that salvarsan destroys the spirochete when brought in contact with it, they say that what they have already learned is that one dose rarely cures, that the intravenous method is preferable for certain reasons, but not so potent as the intramuscular, and that in cases of long standing syphilitic disease salvarsan must be given repeatedly in many instances in full doses, and sometimes other agencies, such as mercury, must be invoked. They believe that of all the syphilitic nervous disorders meningitis is the most important on account of its frequency and susceptibility to cure. The primary structural change is in the pia-arachnoid, though later the parenchyma may be the most involved. The future, they believe, will show that the study of the cerebrospinal fluid will be the most important guide in the diagnosis, and they give special attention to this. The proportion of cellular elements and of globulin in the fluid are significant in differentiating the different forms of tabes and paresis, and they discuss the work of other observers such as Nonne, Mott and others on the different reactions. The average dose of salvarsan in nervous syphilis, when vitality is not greatly impaired and the blood pressure is not high, is the contents of one ampule (0.6 gm.). Not more than half this dose should be given, however, in cases with cardiovascular degeneration and high blood pressure. It is not their experience that organic nervous diseases are best treated by repeated small doses, but that full doses are better with patients that have a fair amount of vitality. The technic is described in full and the results of treatment are given.

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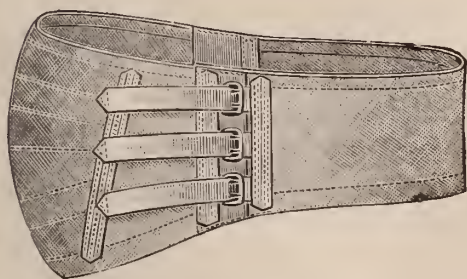
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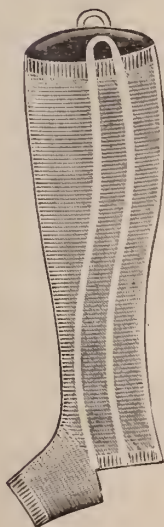
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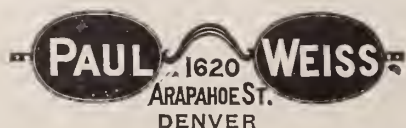
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INCORPORATED NOVEMBER 1, 1888.

The Next Meeting Will Be Held at Glenwood Springs, October 7, 8, 9, 1913.

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**Vice Presidents:** First, Carroll Edson, Denver; second, Wm. H. Hailey, Rouse; third, H. A. Calkins, Leadville; fourth, Charles A. Ringle, Greeley.

**Secretary:** Melville Black Metropolitan Bldg., Denver.

**Treasurers:** Geo. W. Miel, Metropolitan Bldg., Denver.

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Term expires.

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1914—G. H. Cattermole Boulder; F. W. E. Henkel, Silverton.  
1915—C. E. Gardner, Colorado Springs; E. A. Whitmore, Leadville.  
1916—A. G. Taylor, Grand Junction; J. C. Chipman, Sterling.  
1917—Horace G. Wetherill, Denver; A. R. Pollock, Monte Vista.

## Delegates to American Medical Association.

Term expires.

1913—Hubert Work, Pueblo. A. C. Magruder, Colorado Springs.  
1914—Walter A. Jayne, Denver. Frederick Singer, Pueblo.

Alternates.

## State Organizer.

Frederick Singer, Pueblo.

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**PUBLICATION:** C. S. Elder, Chairman, Denver (1913); Edward Jackson, Denver (1914); Geo. A. Moleen, Denver (1915).

**Auditing:** Chas. B. Dyde, Chairman, Greeley; J. C. Chipman, Sterling; Geo. Curfman, Salida.

**Necrology:** E. W. Collins, Chairman; D. P. Mayhew, Colorado Springs; John R. Espey, Trinidad.

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Fremont County, first Monday of January, March, May, July, September,  
November..... W. T. Little, Cañon City  
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EDITOR, Charles S. Elder, M. D., Metropolitan Building, Denver

Annual Subscription, \$2 00. Single Copies, 20 Cents

VOL. X.

APRIL, 1913

NO. 4

## Editorial Comment

LAST CALL FOR VOLUNTEERS FOR THE PROGRAM OF THE NEXT MEETING OF THE STATE SOCIETY! SEND NAMES AND TITLES OF PAPERS TO DR. W. T. H. BAKER, PUEBLO.

### ANNOUNCEMENT.

This is the last issue of COLORADO MEDICINE which will be sent to members who have not paid their dues for the year 1913. All that is necessary to insure its continuance is to pay up at once. To every one who has paid dues a membership card has been issued by the State Society. A letter has been written by the State Secretary to all who have not paid urging them to do so at once. It is impossible, therefore, for anyone who does not receive COLORADO MEDICINE after this issue to feel aggrieved, for the officers of the State Society have done all in their power to prevent the loss of a member.

One of the striking features of the new plan of collecting dues during the first two months of the year is the small number of members suspended. This state is a pioneer in having adopted the plan, it having been in operation two years. Our fiscal and calendar year coincide. Dues are collected during the months of January and February by the county societies

and during the month of March the local secretaries go after the delinquents and make out their Annual Reports to the State Society. The latter must be sent in by April 1st. All names not on these reports are automatically dropped from membership in the State Society, but in order to avoid mistakes a letter is addressed to each delinquent as already mentioned. This system has proven most satisfactory with us and we can heartily commend it to other state societies.

### NEW AND NON-OFFICIAL REMEDIES.

The work of the Council on Pharmacy and Chemistry is one of the important undertakings of the American Medical Association. Such a work should be done at public expense. It should be the duty of the government to compare the manufacturer's claims with the actual merit of his ware whenever it is offered for sale as a nutriment or as a medicine. Our federal and state governments are taking their first steps away from the old commercial principle "*caveat emptor*"—let the buyer beware. In primitive communities such a principle may have been a good one. With the increasing complexity of social relations it becomes a dangerous rule. No physician could keep pace with therapeutic progress if he had to test for himself each

new pharmaceutical product. He could not spare the time from his clinical work. He has not, moreover, the training for such a task.

Until a competent organization was formed by the American Medical Association for the examination of new pharmaceutical products and for tempering the claims of grasping manufacturers the physician had to accept the extravagant assertions of the producer. The physician was often led to believe that many preparations were new when in truth they were but mixtures of old substances that had been dismissed from use because of their dangerous effects or because they had no physiologic action.

The work of this council is, of course, worthless unless its findings are generally known. Each year the American Medical Association publishes a report of the work of the Council on Pharmacy and Chemistry. It makes a neat little volume entitled "New and Nonofficial Remedies." The periodical appearance of this little book is a milestone in medicinal therapy. It does not contain a description of all the products that have recently appeared and are intended for the physician's use. Those that it does not consider have either been rejected by the council or have not been submitted to it. In either case the omission is a protection to the patient and finally to the reputation of the prescriber. It may be assumed that medicinal preparations that are withheld from the examination of the council are exploited in a way that their composition would not justify.

The 1913 edition of "New and Nonofficial Remedies" has just appeared. It costs thirty-five cents in paper or fifty cents in cloth binding. Send for one.

The first duty of law is to keep sound the society it serves. Sanitary laws, pure food laws, and laws determining conditions of labor which individuals are powerless to determine for themselves are intimate parts of the very business of justice and legal efficiency.—Woodrow Wilson, inaugural address.

## Original Articles

### HEMORRHAGE OF THE NEW-BORN\*

J. W. AMESSE, M. D., DENVER.

Holt's dictum that "adult deaths are inevitable, but infant deaths very largely preventable," may be accepted as a reflection of the general awakening in the profession to the significance of diseases that menace the threshold of life.

At no time in the history of medicine has there been such intensive study of the essential affections of infancy and childhood nor such exhaustive experimentation looking toward their ultimate control.

Unfortunately the great bulk of these investigations are hidden away in technical reports, usually appearing in journals rarely accessible to the general practitioner and depriving him in consequence of new truths and clearer viewpoints.

To invite your consideration of a disease challenging the interest of all whose sphere of activity embraces the care of the very young, I have taken the liberty to briefly review the literature bearing on hemorrhagic conditions in the new-born.

Up to a recent date there existed great confusion in the classification of this disorder, due largely to widely divergent views of its etiology, but in the light of our present knowledge we can more readily determine the pathogenesis in each instance and can outline the management with unusual assurance.

Excluding cases of purely accidental origin such as hemorrhages induced by trauma during difficult labor or instrumental delivery, we find a class commonly grouped as idiopathic or spontaneous, constituting the so-called "hemorrhagic disease" of the fortnight following birth.

\* Read at the annual meeting of the Colorado State Medical Society, September 25, 26, 27, 1912.



From 1682, when Mauriceau made careful notes in a case of bloody vomitus in the new born, reports of a similar syndrome known as melena or morbus maculosis neonatorum may be found here and there in pediatric works up to 1850, when Bowditch (1) published an analysis of twelve cases of hemorrhage from the umbilicus.

Two years later, Minot (2) was able to report forty-six further cases of bleeding from the cord. In discussing the frequency of its appearance at that time he remarks:

"It is only within a recent period that the attention of medical men has been called to a class of cases usually considered of rare occurrence but certainly worthy of more attention than has hitherto been bestowed upon them. The subject of hemorrhage from the umbilicus in new born infants scarcely occupies half a page in any treatise on Children's Disease with which I am acquainted, and in most of them is wholly unnoticed, yet the numerous instances that have lately been reported show that this disease, whose very existence perhaps was hitherto unknown to some experienced practitioners, is either not a rare one or has increased to a great extent within the last few years."

In confirmation of this, a review of West's "Diseases of Infancy and Childhood," second edition, published in 1850, and embracing a study of 16,000 children, shows he had not met with a single instance of neonatal hemorrhage.

Ray (3) of London, reported a case about this period and shortly afterward his colleague, Manley (4) described another.

From this time on, instances of so-called hemorrhagic disease were multiplied. Few maternity hospitals have failed to record such cases since the middle of the last century and the relative frequency is increasing until it now averages more than one case in each thousand births, with a mortality ranging from sixty-five to eighty-five per cent.

Of 5,000 births in the Boston lying-in asylum, thirty-two cases of spontaneous hemorrhage were reported by Townsend (5). Rifter noted one hundred and ninety cases in 13,000 births at the lying-in hospital of Prague, while Epstein observed idiopathic bleeding in eight per cent. of the babies born at the foundling asylum in the latter city. Institutional cases are more common, however, than those seen in private practice.

It will be remarked that this disorder appeared, or at least became common, coincidentally with the discovery of chloroform and its use in labor. Investigations in many clinics and by trained observers in various parts of the world have conclusively proven, as a matter of fact, that chloroform poisoning constitutes the greatest single factor in the etiology of post-natal hemorrhages, and, together with the revolutionary methods of treatment, makes any extended study of this disease one of extraordinary interest. Immediately following the general adoption of chloroform for anesthetic purposes, cases of delayed poisoning were described. Casper (6) as early as 1850 recognized this condition and in 1862 wrote: "It can no longer be doubted that there is such a thing as chronic poisoning by chloroform—that is, when the drug does kill it need not always do so instantaneously but hours, days or even weeks may elapse during which the person anesthetized remains continuously under the influence of a poison to which he at last succumbs."

In 1866 Nothnagel proved that chloroform produced fatty degeneration of the liver and heart muscle when injected subcutaneously or into the stomach. In a paper of exceptional interest and merit Bevan and Favill (8) published in 1905 complete notes of a case of hepatic toxemia supervening in a simple operation on a girl of twelve. Chloroform was used and an unusual quantity was required to anesthetize

ize the patient. On the second day signs of a toxic psychosis presented and in spite of the most skillful management, death ensued two days later.

The autopsy showed fatty changes in the liver, multiple ecchymoses and enlarged spleen, with the operative wound and neighboring tissues entirely negative. In reviewing the literature, the authors found reports of twenty-nine similar cases.

Guthrie (9) of London, was the first to call the attention of the profession to this complication in a paper entitled "Death After Chloroform Anesthesia in Children Suffering a Peculiar Form of Fatty Liver." Harold Stiles (10) proved by actual inspection of the liver that the fatty changes did not exist at the time of operation. In a report of eight personal cases he shows also that the degenerations are not confined to the liver but involve the kidneys, blood vessels, stomach, meninges and brain. Upon substituting ether for chloroform, his results thereafter were entirely satisfactory.

Buhl and von Hecker had previously (1861) described a condition afterwards known as Buhl's disease, under the title "Acute Fatty Degeneration in the New-Born," the pathological features of which were hemorrhages, fatty changes and icterus. These infants were usually born partially asphyxiated. In a few days icterus was noted and succeeding this, uncontrollable hemorrhages from the umbilical stump or into the skin, mucous membranes or internal organs.

Winckel, in 1879, attempted to add still another classification in which the predominating syndrome was characterized by cyanosis, hemoglobinuria, icterus and fatty degenerations, much resembling fatal poisoning by potassium chlorate, phosphorus or arsenic.

It is quite evident, however, that neither Buhl's disease nor Winckel's disease are distinct pathologic entities.

The surprising resemblance between a

case of late chloroform poisoning in an adult and a typical illustration of Buhl's syndrome in an infant was noted by Graham. In a series of experiments with chloroform on pregnant animals he was able to produce in the offspring the identical clinical and pathological phenomena which distinguish hemorrhagic affections in the new-born.

From the fact that this major anesthetic is freely given to most women in labor and also that phosphorus poisoning can be transmitted from mother to fetus (Friedlander, Miura), Graham advanced the hypothesis that chloroform is responsible for a great majority of the cases of melena neonatorum. Further observations have fully justified this contention.

In an endeavor to explain the action of this drug on the tissues affected, and conceiving the process to be one of suboxidation, Graham confined pregnant animals in jars, permitting only enough oxygen to barely sustain life. The young of these animals exhibited visceral lesions in every way similar to those of chloroform poisoning.

My own investigations with respect to chloroform poisoning date back fifteen years, to the time when I served as student assistant to Prof. Arthur Cushny, now of the University of London, but at that time holding the chair of pharmacology in the University of Michigan.

I observed that animals dying several days after prolonged anesthesia with chloroform invariably exhibited, macroscopically, fatty changes of the liver.

In 1900 and 1901, while serving as a commissioned officer of the Marine Hospital Service at San Francisco, Honolulu and Manila, I again observed that in fatal cases of bubonic plague, fatty changes in the liver were constant, and, coincident with them, a tendency to uncontrollable hemorrhages.

In 1905 in New Orleans, and for the

three following years in Havana, Cuba, I again had opportunity in the post mortem examinations of persons dead of yellow fever, to note the invariable association of fatty degeneration of the liver with hemorrhage. Later on, at Bellevue Hospital, I found in the dead room babies showing characteristic lesions of the liver following prolonged and difficult labor in the mother, and in which chloroform had been employed.

From these observations, I concluded that any poison, whether chemical or biologic, could promote hemorrhage by first inducing fatty changes in the liver, and with this as a text I undertook the preparation of this paper.

While experiments seemed to account for the fatty changes almost constantly present, the cause of the uncontrollable hemorrhages accompanying them was more difficult to determine.

Schwarz and Ottenberg (11) found that in all these cases coagulation of the blood is slow or entirely absent. In order to insure normal coagulation of the blood several antecedent elements are essential. These investigators were led to believe that in certain instances there may be:

- (1) An absence of fibrinogen.
- (2) A diminution of the calcium salts.
- (3) A deprivation of prothrombin or thrombokinase.
- (4) Certain inhibiting substances in the blood such as: (a) Bile (it is known that bile salts prevent the formation of fibrin ferment, which may explain the common onset of icterus prior to hemorrhage); (b) Peptones and albumoses.

We know from the researches of Mitchell, Reichert and Martin that these latter complex bodies, together with certain globulins, constitute the hemorrhagic principles of snake venom.

Again the hemolytic substances arising in the course of purpuric smallpox and so-called "black measles" unquestionably be-

long to this group of poisonous proteids. The toxins may act wholly by liquefying the blood and accentuating the osmotic index, or in addition to this may induce an endotheliolysis in the smaller blood vessels.

In reviewing their work, Schwarz and Ottenberg came to the conclusion that the impaired blood coagulation in these cases was due to the destruction or interference with the production of thrombokinase. Duke (12) believes the blood platelets play an important part in arresting hemorrhage. His observations show that the bleeding time was invariably prolonged when the blood platelet count was excessively reduced or when the fibrinogen content was much diminished.

According to Wright and Kinnicutt (13) the normal count varies from 250,000 to 400,000 per cubic mm. In two cases reported by Duke the blood platelets numbered 3,000 and 20,000 respectively. The bleeding time of Case 1 was ninety minutes and of Case 2 twenty minutes, the normal ranging from five to seven minutes.

After transfusion, the bleeding time for small wounds was reduced to three minutes in each case, and the platelet count rose to 100,000 per cubic mm. Experiments also seem to point to the fact that these elements are concerned in the production of thrombi at the site of vessel injuries. An exhaustive inquiry into the cause of persistent bleeding after chloroform administration has recently been made by Whipple and Hurwitz (14). Their experiments "indicate clearly that fibrinogen is formed by the liver, or at least that its formation is dependent on normal functioning of that organ." It was found that the fibrinogen content, which in normal dogs averages .3 to .6 grams per 100 cc. of blood, could be diminished directly in proportion to the area of liver necrosis induced by the anesthesia.

On reducing the fibrinogen ten per cent.



animals exhibit a tendency to hemorrhage, and the blood clots become unstable.

The authors proved that neither the bone marrow nor the white cells are responsible for the fibrinogen, also that in seven cases of chloroform poisoning, the calcium and the thrombin were normal. It would appear, therefore, that the absence of fibrinogen is a direct cause of these rebellious complications.

Another factor of importance in the etiology of blood dyscrasias of the new-born is syphilis. Wilson (15) states that of forty-five cases of hemorrhage in the Philadelphia lying-in charity occurring between 1901 and 1904, ten were due to congenital lues. But here, as with chloroform poisoning, the more direct cause lies in the fatty changes of the liver and the resulting interference with normal physiological processes.

The clinical picture which sometimes accompanies hemorrhages at birth, including high temperature, rapid pulse, dyspnea, vomiting, diarrhea and the tendency to appear so frequently in hospitals suggest strongly an infection.

Townsend and Finkelstein are among those who believe that sepsis in some form is accountable for many of these cases. The latter divides them into two groups:

(a) Those infected by the ordinary pyogenic cocci.

(b) Cases due to specific bacteria, producing hemorrhagic septicemia when injected into animals.

Among the organisms under indictment thus far we note the *Bac. Enteriditus*, *Bac. Lactis. Aerogenes*, *diphtheria bacillus*, *Bac. Hem. of Kolb* and the typhoid bacillus, but the possibility of post mortem contamination must not be lost sight of.

Finally, uric acid infarction must be reckoned with as a cause of hematuria and sudden death in the new-born. The following case from my service at the City and

County Hospital of Denver illustrates this fairly common condition:

Baby A——, born January 19, 1912. full term, easy delivery, normal weight, parents healthy. The history continued to be that of a normal baby until the third day, when the nurse reported a large blood stain on the napkin. Examination proved that this hemorrhage originated in the urinary tract, and analysis demonstrated a definite hematuria. A diagnosis of uric acid infarct was offered and an attempt made to dissolve the kidney deposits by the ingestion of large amounts of water, but in a few hours the child went into collapse and died. The autopsy performed by Dr. R. C. Whitman a few hours after death revealed extensive infarctions in both kidneys with a considerable hemorrhage into the medulla of the right. Fan-shaped deposits of crystalline urates could readily be outlined in the pyramids and straight tubules, with evidences of intense irritation in the pelves. No changes of moment were found in any other vital organ.

It is evident from the above that hemorrhages during the week or two following birth cannot all be ascribed to any one factor. Of special interest in the differential diagnosis, however, is the fact that we can absolutely rule out hemophilia.

In spite of a common inclination to include all cases of uncontrollable bleeding in the group of hereditary dyscrasias, it is known that the manifestations of hemophilia rarely appear before the end of the first year. In hemorrhagic disease the sexes are equally attacked and recovery frees the infant from any further menace of this character, while in hemophilia males predominate in the ratio of thirteen to one and the patient is subject to repeated bleeding throughout life.

#### TREATMENT.

The remarkable advance in our knowledge of the etiology of post-natal hemorrhage does not surpass in interest or sig-

nificance the brilliant success attained by newer methods of treatment.

Our conception of its pathogenesis has been so confused up to the present decade that little improvement was made over Minot's management of a case half a century ago.

To the various hemostatic agents he employed, including compression, ligature, collodion, plaster of paris and silver nitrate, we added gelatin, adrenalin and the calcium salts, with no appreciable influence on the mortality.

In 1905, Weil (16) in his study of hemophilia, discovered that hemorrhage could be controlled by the injection of fresh animal sera, either intravenously or subcutaneously. Continuing his experiments he found that while the serum of horses, rabbits, bovines and human beings were all capable of hastening the coagulation of the blood, beef serum was dangerously toxic. Weil also determined that 15 cc. intravenously or 30 cc. subcutaneously was the proper adult dosage, and that the serum should be less than two weeks old.

Leary (17) usually employs rabbit serum, it being easiest to obtain and less apt to be contaminated with tetanus. He recommends fresh diphtheria anti-toxin, however, though recognizing the rather remote dangers of serum sickness and anaphylaxis. Of twenty cases treated by this method, fifteen recovered.

Welch (18) in 1909 began the use of normal human serum in the control of hemorrhage at the lying-in hospital, New York. Of eighteen cases so treated, all recovered. In a previous series of eighteen cases treated by drugs, seventeen died.

Of seven cases observed by Schloss and Commiskey (19) some treated with human blood serum and others by subcutaneous injection of the whole blood, taken usually from the infant's father, six recovered. The use of the blood itself seemed indicated, first, to save valuable time, and

second, in the belief that the formed elements had independent influence in inducing coagulation of the blood.

Since Harvey's discovery of the circulation," Welch remarks, "the profession has had at times great hopes of finding in the transfer of blood from some healthy source to individuals suffering disease, a means of cure."

It was to be expected, therefore, that attempts at transfusion would be made in instances of hemorrhage in the new-born, and, the operation being a most delicate and difficult one, it was not surprising that fatal accidents, such as hemolysis, red cell embolism and thrombosis occurred.

Crile was the first to perfect a safe method of transfusion, Carrel later describing an end-to-end anastomosis between the femoral, the popliteal or the internal saphenous vein of the infant and the radial artery of the donor.

Lambert, Carrel and Brewer (20) reported the first successful case of transfusion for hemorrhagic disease of the new-born. Other cases have since been added by Swain, Murphy and Jackson (21), by Mosenthal, and by Newell and Vincent. The operators caution against transfusing too rapidly. Too much blood or too rapid flow may dilate the right heart and induce cyanosis, cough and dyspnea. Certainly no one without extended laboratory experience in the surgical technique should attempt the undertaking.

Surveying this grave disorder of early life as a whole we may formulate the following conclusions:

1. Spontaneous hemorrhage of the new-born is usually occasioned by an interference with the physiological functions of the liver.

2. The degenerations in this organ are commonly due to chloroform poisoning transmitted from the maternal to the foetal circulation during parturition.

3. The logical method of arresting such

hemorrhages is to supply either through blood serum or whole blood the coagulative principles absent in the child.

4 Transfusion should not be attempted unless a resourceful surgeon is in attendance. Subcutaneous injections have reduced the mortality almost to nil and must be considered the therapeutic route par excellence.

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#### DISCUSSION OPENED.

Dr. J. N. Hall, Denver: I merely want to say that I have had opportunity to talk over this matter, in which I have been much interested, with Doctor Amesse. I have no great personal knowledge of the matter, but I wish to say that I have the utmost faith in every conclusion which he has advanced, and believe that the method of treatment which will be adopted in this is the subcutaneous injection of blood, as he has mentioned. It is utterly simple, and its effectiveness is enough to lead one to think of that long before he would consider the idea of a delicate and difficult technical transfusion. I am very much interested in the paper.

Dr. Horace G. Wetherill, Denver: I regard the paper we have just listened to from Doctor Amesse as one of the most important communications presented at this meeting. Some members of this society may remember that following the paper of Bevan and Favill, and following the work of Harold Stiles, I read a paper in the section on obstetrics and gynecology of the American Medical Association in 1908, referring to the late poisonous effects of chloroform, and I cited a number of cases of my own and of my associates in which definite symptoms of late chloroform poisoning had developed with characteristic liver symptoms and hemorrhages. All who have worked in the hospitals of Denver in the last fifteen years will recall the cases in which after operations under chloroform the patients had what was called intestinal paresis, followed by jaundice and vomiting, first of mucus and then of bile, and then of grumous coffee-ground material, which, of course, was partially digested blood. These people died almost invariably. I had also many years ago in Trenton, N. J., an unfortunately fatal result from uncontrollable hemorrhage, following circumcision done shortly after the birth of the baby, chloroform having been given the mother during labor. I never had put those two things together. Doctor Amesse has done it for us, and I think he has done all of us a great service in showing that chloroforming the mother during labor may produce this condition in the infant. It seems to me to be extremely important.

In discussing this subject, or an allied subject, at the recent meeting of the American Medical Association, I said that "WE HAVE AT LAST COME TO THE PLACE WHERE WE OUGHT TO SAY THAT CHLOROFORM IS NOT A SAFE ANESTHETIC UNDER ANY CIRCUMSTANCES." I was in Baltimore at the recent meeting of the American Gynecological Society, and I saw Dr. Whitridge Williams present the specimens from a patient who had died of late chloroform poisoning (the typical yellow liver and the other characteristic organs) as a result of the administration of chloroform during labor. This is the one field in which we have felt for years that chloroform is safe. Doctor Williams and others have shown that chloroform is not safe, even in obstetrics. We used to feel that chloroform was a safe anesthetic for children. Harold Stiles and others have shown that chloroform is an extremely dangerous anesthetic for children. The late poisonous effects of chloroform are as unavoidable and inevitable with pregnant women and with children as with other patients and the results are quite as disastrous. If we eliminate these two fields and these two classes of cases in which we have thought chloroform was definitely safe, then we have wholly eliminated chloroform as a safe anesthetic in any case. We have heard it said many times, and doubtless many of you now hold the opinion, that chloroform is a safer anesthetic than ether in tuberculosis. I have had a large experience in operations upon tuberculous people from the various sanatoria in Denver, particularly with those from the Agnes Memorial Sanatorium. They have all been



given ether in preference to chloroform during the last five years, and we have not had a single fatality or a single mishap, immediate or remote, as the result of the anesthetic. I feel certain, even in tuberculosis, that ether, properly administered, is definitely a safer and better anesthetic than chloroform.

**George M. Blickensderfer, California Building, Denver:** It is not my purpose to discuss Doctor Ames's paper, but merely to report a case in connection with it. Preliminary to doing so, however, I wish to emphasize one or two remarks which Doctor Ames has made. One is the deplorable lack of information in modern text-books on this subject and the second is the realization of the importance of this subject which must come to anyone who has read Graham's experiments. In almost every one of his experiments he has been able to produce the pathological syndrome, which is seen in Buhl's and Winckel's diseases.

There is another etiologic factor of great importance in hemorrhage of the new born, and that is uric acid infarction, and it is in connection with this factor that I wish to report this case.

The case was that of a baby who weighed at birth fourteen pounds. About the third day my attention was called to the napkin being stained with blood. We watched it closely and found that after urinating a small amount of blood was passed each time. Obtaining a specimen of the urine I examined it and found that it contained crystals of uric acid and calcium oxalate. I also examined the urine of the mother and found that her urine contained the same. In searching about for some way of controlling this hemorrhage I thought of the most simple expedient first, and that was in giving large amounts of water to dissolve the crystals. This was done, but without success. My attention was then called to a preparation known as Piperazine, which I gave the baby with the result that the crystals almost immediately disappeared from the urine and the hemorrhage ceased. The same treatment was given the mother with similar results.

**Dr. Saling Simon:** The paper of Doctor Ames is particularly interesting to me, especially that portion of it which bears upon the treatment with the serum and the whole blood. I would like to emphasize one point that Doctor Ames brought out, but did not dwell upon—probably due to lack of time—and that is the danger of anaphylaxis by the use of a foreign serum, such as that obtained from a rabbit or beef or guinea pig, in hemorrhage of the new born. It is much better, where possible, to use either the serum or the whole blood from another person. The obtaining and administration of serum is not a difficult procedure, and can be done by almost anyone with a little experience.

The blood is simply withdrawn from some prominent vein at the fold of the elbow, after sterilization of the skin, and allowed to coagulate in a sterile test tube, and the serum is pipetted off into another sterile container and the amount required injected subcutaneously with an antitoxin syringe.

With your permission I shall report an inter-

esting case in which I used the serum treatment. It has a collateral bearing upon the subject and will illustrate an important point. The case was referred to me by Doctor Burns of Denver. A lady who had had several previous pregnancies, which were necessarily interrupted on account of dangerous eclamptic symptoms. At the time I saw her she was seven and one-half months pregnant, and she was then beginning to show premonitory signs of eclampsia, such as albumin and casts in the urine, headache, etc. As the parent's were very anxious for this baby to be born, the question arose as to a method of treatment which would bring about the birth of this child alive, without serious jeopardy to the mother. The method pursued was as follows: We obtained 30 cc. of blood from a healthy pregnant woman, and from this some 15 to 20 cc. of the clear serum were obtained, and this amount injected into the vein of the patient. It was my first experience with the treatment, and I committed some errors in the technique. Following the injection of the serum she developed a chill, and the next day labor began. She gave birth to about a seven and a half months' living child. The child was perfectly normal and the mother, however, on the third or fourth day developed blindness, but that soon cleared up and she and the baby are today well.

The danger of accidents following the use of a foreign serum is illustrated in a case of pulmonary tuberculosis to whom I administered horse serum for persistent bleeding. The patient, a barber, who has been in Colorado for two years, had suddenly developed a series of severe hemorrhages, followed by persistent blood-spitting. The usual methods of arresting this bleeding proved unavailing, and I finally resorted to the horse serum as obtained at the drug stores. Following this the blood-spitting stopped, but nine days from that date my patient developed a very severe urticaria, followed by a rise of temperature to  $103\frac{1}{2}$  F., headache and vomiting and all the symptoms of anaphylaxis and is at the present time running some fever.

**Dr. F. N. Cochems, Salida:** It has been remarked by some professional men, and believed by others, that chloroform is an anesthetic. For a great many years I have taken the position that chloroform is really not an anesthetic in the real sense of the word, but a poison that some people escape from with their lives by taking it. I believe it should really be eliminated as an anesthetic by law. A number of years ago some of my colleagues in Denver were in the habit of giving chloroform in the early part of the anesthesia, then following with ether, because, as they said, it was a more pleasant anesthetic. I, at that time, called their attention to the great danger of chloroform in the early stages of anesthesia. I remarked to one of my friends upon several occasions that they would certainly, as a result of this practice, have a chloroform death. It was only a few months after that he came to Salida and said, "We have turned the trick; we have killed a patient." He has never given any more chloroform. The point that I wish to

make is that I have always felt that chloroform is an exceedingly dangerous anesthetic, and I have never given it for twenty years, and if I live twenty years more, will never give it. I have never allowed it to be administered to a patient of mine, and I have practiced medicine and surgery in this state for nineteen and a half years. The paper of Doctor Amesse is particularly interesting to me, for as I have said, I believe chloroform is really a poison to the patient, and Doctor Amesse has said that the danger extends even to the child in obstetrical cases.

I have done some obstetrical work in this state—not a great deal; a few hundred cases, perhaps—and have never had a hemorrhage in the new born, and perhaps it may be due to the fact that I have never given chloroform to the mother in these cases, but when necessary, always ether. Chloroform has been given in the high altitudes. I remember reading a paper before the Denver County Society on ether anesthesia. One of the papers read at that meeting was by Doctor Kahn, of Leadville, in which he claimed that chloroform was safer in the high altitudes, even as it was believed to be safer in the hot climates. It is of high importance to know whether this contention is correct, for nearly every town in our state is a mile or more high. I have operated in a number of towns which are two miles high, and I believe that chloroform is equally as dangerous in these high altitudes as it is on the plains. Ether acts as well high as it does at sea level. The main point I wish to make is that I believe that chloroform is a poison and should never be administered as an anesthetic to a pregnant woman or to anybody else.

Dr. Morris J. Krohn, Denver: While the paper that Doctor Amesse has given us is certainly a very excellent one, there are, however, three things which I believe might be added in discussing the treatment of hemorrhage in the new born. The first is gavage, when the infant is too weak to suckle. This method of forced feeding is best accomplished by the use of a rubber catheter or stomach tube attached to a glass funnel. The second is the placing of the infant in an incubator, where one can be obtained, and the third is the constant use of oxygen. Not long ago I had under my care a hemorrhagic case in a new-born infant, which I believe was saved by placing it in an incubator and keeping it constantly on oxygen.

Dr. W. T. Little, Cañon City: Doctor Amesse observes that chloroform is the etiologic factor in these hemorrhages of the new born in the large majority of cases, and perhaps it is true. Certainly it is a most interesting and valuable suggestion. I believe there is always a disturbance of the liver in these cases, but in the two cases that I have had of fatal hemorrhages from the umbilicus in new-born infants in neither case was chloroform administered to the mother, and in neither case was there a history of syphilis or any past history that might suggest syphilis in either the father or the mother. I am satisfied that chloroform will not explain all of these cases; either will syphilis explain all of them. I should like to ask Doctor Amesse in closing his discussion if

it would be possible to control these hemorrhages by bringing human blood in contact with the bleeding umbilicus. I remember reading a clinical report in the Journal of the American Medical Association some time ago by an Iowa physician who was caught in such a case many miles from home. He opened his finger and allowed the blood to drop on the bleeding stump and thus controlled the hemorrhage. I am not sure, but believe this was an umbilical hemorrhage. If that will work, it will be much easier, of course, than the operation of transfusion.

#### DISCUSSION CLOSED.

Dr. John W. Amesse, Denver: I am certainly gratified at the discussion aroused by this paper. With reference to Doctor Little's inquiry, it is relatively easy to check simple hemorrhage by the application of human serum. It has been done in a number of instances reported in the literature.

It would appear that all that is necessary in these cases is to start the process of coagulation. For example, we know that normal blood may be drawn through tubes lined with paraffine into a basin lined with the same substance and no coagulation of the blood takes place for hours. If, however, one lays a sterilized glass tube in the vessel, coagulation takes place at once.

Chloroform poisoning does not explain all cases of hemorrhage in the new born. Uric acid infarcts may be the etiologic factor, or the hemorrhage may be due to the action of various organisms.

#### RECENT INTERPRETATIONS OF FEEDING DISTURBANCES IN INFANTS.

F. P. GENGENBACH, M. D.  
DENVER.

It is by no means the purpose of this paper to cover scientifically the whole range of infant feeding, but rather to give a brief resumé of the progress made in this most important subject for the benefit of those practitioners who frequently have neither the time nor the opportunity to follow the world-wide investigation constantly being carried on to determine the exact causes of feeding disturbances in infants.

Even as the adult is a grown-up child, so the infant is a very young adult, and even as the adult has difficulty in digest-

\* Read at the annual meeting of the Colorado State Medical Society, September 25, 26, 27, 1912.



ing and assimilating certain food elements, so does the infant meet with a similar difficulty since its principal source of nourishment is milk, called the perfect food because it contains practically all the food elements.

Is it surprising then that we should have difficulty in adapting the food to the individual infant? Even breast milk, although it is the natural food for the infant, sometimes fails to agree, not necessarily because the food is at fault per se, but because it is often impossible to modify some of the individual food elements to the particular infant in hand. Rather more surprising is it that it has taken us so long to thoroughly appreciate the fact that each individual food element may of itself for some infants or under certain environing conditions for many other infants, become the actual cause of the feeding disturbance. As Helmholtz puts it: ("The same food, be it mother's or cow's milk, that acts as a food when given in amounts below the tolerance limit, will act as a poison when given in amounts above it, and the disturbances will vary according to which element of the milk is in excess.")

It is therefore with questionable amusement that we look back at the radicalness of certain pediatric teachers that this or that food element is alone to blame. First the proteid or casein was held up as the seapegoat, because of the frequency of curds in the stools of infants with indigestion. As a result infant feeders were divided but not the less intense as to their advocacy of modifying cow's milk with plain water, cereal dilutions (barley, oatmeal, rice and arrowroot); addition of lime water, the bicarbonate or citrate of soda, or even preliminary peptonization.

At the same time emphasis was laid upon the chemical composition of mother's and cow's milk, and as it was certain that the infant could handle only a very low percentage of proteid, it was quite easy to

fall into the natural mistake of increasing the fat in the food, since the percentage of sugar was usually kept about the same.

Then we had just as intense advocates of cream dilutions and top-milk feedings. Still the infants continued to have feeding disturbances.

About this time the so-called German school of pediatricians, including such well-known and able teachers as Heubner, Czerny, Finkelstein, Keller and Langstein, pointed out the fact that curds in the stools of infants suffering from indigestion were largely if not entirely composed of fat, and not casein as had been the popular belief. The natural conclusion was that the fat and not the casein in cow's milk was the disturbing factor, so the Germans advocated whole milk dilutions which still furnished the necessary amount of proteid, and at the same time reduced the fat to reasonable percentages.

Some American pediatricists went another step farther and started to advocate skim-milk modifications. Coincident with new discoveries in medicine it is always difficult to prevent the pendulum from swinging too far in the opposite direction.

The Germans, with their natural thoroughness, carried their investigations still further. Thus Finkelstein precipitated the curd from equal quantities of mother's and cow's milk and found that when the curd from cow's milk was added to the whey from mother's milk, the infant continued to gain the normal amount in weight, but when the curd from mother's milk was added to the whey from cow's milk, the weight curves went down. As this experiment indicated that the casein in cow's milk was not the disturbing factor, he carried out further experiments the results of which were to show that an infant could digest, without disturbance, much larger quantities of casein than were ordinarily required.

The natural inference also from the first



experiment was that something in the whey from cow's milk must be the disturbing factor. His first thought was that it was the salts, and by a series of experiments he showed that some cases of eczema were markedly improved, if not entirely cured by withdrawal of the salts in the food, or reducing their percentage to a minimum.

However these are exceptional cases and we must therefore look for other possible disturbing factors in the whey, and so we are brought to an investigation of the element which was formerly supposed to be the least likely to cause disturbance, viz., the sugar. A great deal of work has recently been done along this line. Finkelstein and his able co-worker Ludwig Meyer have suggested that it is an excess of sugar, and more particularly milk sugar in the infant's food that primarily causes the fermentative dyspepsia of infancy, and as a result of this disturbance the digestion of other elements in its food, especially the fat, become impaired, and as a result we find the fat curds in the stools.

The sugars most commonly used in infant feeding are milk, cane and malt sugars. They are disaccharides and must be broken down during the process of digestion by their respective ferments, lactase, invertin and maltase, into their respective monosaccharides dextrose and galactose, dextrose and levulose, and dextrose and dextrose, before they can be assimilated. As only the dextrose is absorbed, it is easy to understand why malt sugar is more easily assimilated. Reuss has demonstrated the fact that 7.7 grams per kilogram of maltose can be assimilated as against 3.5 grams per kilogram of lactose or saccharose or more than double the amount.

"Leopold found that 43 per cent. of the babies tested with lactose, 47 per cent. of those with glucose, 42 per cent. of those with saccharose, and only 33 per cent. of those with maltose, reacted with fever. This fever was always accompanied by diarrhea,

and in none of the cases tested in which the stools remained normal did the sugar cause fever."

Whether some of the sugar disturbance is due to impurities in the milk sugar may be worthy of some consideration. Coit says: "Three years ago I succeeded in persuading the National Milk Sugar Company to refine this market sugar by two or more recrystallizations in order to remove the gross impurities and the color, and to attenuate the bacterial toxins which the general chemist of the concern admitted were present. I believe that many of the difficulties of bottle feeding are due to ordinary milk sugar."

So the pendulum is now swinging toward sugar as a most important disturbing factor and malt sugar is being enthusiastically advocated as the only sugar to use. But malt sugar does not work well with every infant, nor will every infant take a food with a malt flavor, and so the infant feeding millennium has not yet arrived.

But there are factors other than the elements in the food itself that must be considered. One of the most important is bacterial contamination of milk, with its preventives improved dairy sanitation and hygienic handling of milk, giving us certified milk and the remedies for contamination, pasteurization and sterilization. No one will deny the advisability, if not the necessity, for as clean milk as possible, but when milk commissions arbitrarily fix the number of bacteria permissible in a cubic centimeter of certified milk at 10,000, or 30,000, as the case may be, one cannot help but feel that if it is safe for an infant to swallow that many bacteria per cubic centimeter, that after all, the bacteria usually found in milk cannot be such a great menace in themselves. Milk infected with the germs of scarlet fever, diphtheria, typhoid fever, etc., is of course something different, but cases of specific bacterial infections certainly play an unimportant part in the

almost numberless cases of feeding disturbances in infancy.

For years it was believed that bacteria played an important rôle in the summer complaints of infancy, but to quote from Bartlett's review of Rietschel's article, "Die Sommersterblichkeit der Säuglinge," "the important facts to be noted here are that there has never been isolated any definite bacteria which can experimentally be proved to be the specific causes of the deaths resulting from summer diarrhea; that there has never been isolated from milk contaminated by bacteria any definite toxic substances whose effects on the organism can explain the large number of deaths from diarrhea in summer; and that there has not been isolated from the stools of infants, bacteria which can experimentally be proved to be responsible for the deaths from summer diarrhea. An explanation of summer diarrhea or of the large infant mortality in summer on bacteriologic grounds is purely a hypothesis."

On the other hand Rietschel in this same article points out some very interesting facts in this connection. First, that summer diarrhea is most common in those industrial countries which lie almost entirely in the so-called temperate zone, the zone of greatest variations of temperature, viz., America, England and France, Germany, Austria, Russia and the Balkan States. Farther north or south the mortality is not so high.

Second, these are the countries of large cities with more or less congested tenement districts where a large proportion of the laboring classes live.

Third, statistics show that the number of deaths among infants in summer increases directly proportional with the increase of outside temperature.

Fourth, that these deaths occur as a result either of excessively high temperature causing a form of heat stroke or prostration, or of prolonged high temperature with

little variation between the day and night temperature, causing a form of heat stasis or exhaustion.

Fifth, that there is therefore a higher mortality among those living in houses where the infant has the least chance of cooling off, i. e., in houses in the congested districts in the lower part of the city as opposed to those on the hills where the houses are not built so closely, thereby permitting a better circulation of air.

The following figures for Dresden illustrate this point: "In 223 streets there were no cases of death in the midsummer period. In 50 streets, 20 per cent.; in 16 streets, 30 per cent., and in 7 streets 40 per cent. of the infants living on those streets died in the midsummer period. The streets in which there were no deaths were situated in the higher parts of the city where there was a better circulation of air, while in those streets where the mortality was greatest there were greater congestion and less favorable conditions for the access of free air in dwellings." (Weiner.)

Liefman found that in 35 streets alone in Halle, there were 577 deaths of children in summer, while all the rest of the infant deaths, numbering 619 (only 42 more) were distributed over 204 streets.

Meinert analyzed 580 cases of death from summer diarrhea with relation to the different floors on which these children lived. Of these there died in the basement or cellar, 3.98 per cent.; ground floor, 12.78 per cent.; first story, 10.7 per cent.; second story, 9.13 per cent.; third story, 8.18 per cent.; fourth story, 9.18 per cent., and fifth story, 11.27 per cent. Thus the mortality was much less in the basement where it was comparatively cool, although otherwise considered less healthy, and the mortality highest on the ground floor, which is exposed to the reflected heat of the pavement and where the circulation of air is less than in the upper stories. The high mortality on the top floor is accounted for by the



excessive radiation of heat from the roof, which more than offset the otherwise better circulation of air.

Thus new disturbing factors are constantly being investigated, and year by year we are making steady progress in the solution of this great problem of feeding disturbances in infancy, which directly and indirectly causes such an appallingly high infant mortality.

#### DISCUSSION OPENED.

**Dr. W. T. Little, Cañon City:** I recall some years ago when I was in Atlantic City attending a session of the American Medical Association I asked a physician whom I met at the hotel what section he was going to attend. He said: "The Children's"; that any man who can successfully treat babies never needs to starve. We know that the German pediatricians are leading the world in medical research, but it was Rotch of Boston, who gave us the first successful method of bottle feeding when he introduced the percentage method. While our knowledge of the digestion of fats, proteids and sugars has been greatly added to in the past few years, at the same time the percentage method by which we can build a successful formula with which to feed our babies remains the practical and easy one. In spite of the increasing refinements of bottle feeding, the fact remains that infant mortality is very much less among babies fed on the breast, and this has caused a propaganda to be instituted in favor of breast feeding. Dr. Jacoby, in his recent president's address at the American Medical Association meeting, gave a good deal of space to this subject. He deplored the increasing number of mothers who put their babies on the bottle, and made the statement that 100 per cent of women can nurse babies if they will. It seems to me that 100 per cent is putting it pretty high, for I am satisfied that I have had mothers who could not nurse their babies; but I have also seen a good many mothers wean their babies upon the advice and with the consent of their physicians when there was no good and sufficient reason for doing so.

Dr. Gengenbach has reviewed in this very interesting paper some of the recent work that has been done, particularly by the Germans, not only on infant feeding but infant mortality, and these subjects should deeply interest every practicing physician.

**Dr. John W. Ames, Denver:** I believe the secret of success in feeding cow's milk to children is not to feed it at all. It requires four stomachs in a calf to digest this food, and we are apt to expect too much from the delicate stomach of an infant.

It is of more than passing interest to realize that the basis for the scientific feeding of infants was laid by the Rotch School of Boston. In this connection I would like to pay my com-

pliments to the originator of the so-called casein, or albumin milk, which was introduced two years ago this summer. Immediately following the publication of Finklestein's paper we decided to give this method of feeding a trial in the baby wards of Bellevue Hospital. I was selected to prepare this milk every morning for several weeks, and my arm aches yet as I think of the manual labor involved in pressing the tough precipitate of casein through a fine-meshed sieve. Our experience with ei-weiss milk did not bear out the claims of Finklestein in any particular.

The keynote of our efforts in the conservation of infants is sounded in the widespread counsel to mothers for breast feeding of all babies for six or eight months. One-fourth of the mortality among infants in the United States is due to gastro-intestinal diseases contracted very largely through infected milk.

Where from intercurrent diseases or complete failure of the glands to produce milk in sufficient quantities breast feeding is impossible, mothers should be instructed carefully in the essentials of modified milk feeding and the methods of pasteurization and sterilization. It is not sufficient to provide one simple formula on the discharge of the mother and baby from the obstetrical ward. The cases should be followed up by visiting nurses wherever possible and the character of the feeding changed to meet the growing needs of the child.

**Dr. L. P. Barbour, Rocky Ford:** The gentleman who has just spoken says that cow's milk should not be fed at all. I wonder what would have become of probably 10 per cent of this room if it had not been for the old cow! I just venture 10 per cent of us—I am one of them—were raised on cow's milk.

**Dr. Ames:** So am I, Doctor! (Laughter).

**Dr. Barbour:** Another thing: In these discussions so much of the talk is applicable to the large cities. We of the country towns have our problems along these lines. Years ago when I began to practice I was in a town where filth was triumphant—a mining camp in Tennessee—one of the Tennessee Coal & Iron Company's mining camps. If ever there was a filthy set of people it was the miners of that camp. I quickly learned if I kept the old cow close to the house and sent them out to milk fresh milk I got along with my babies first rate, and there is the difference between you of the city and we of the country. We have clean, fresh milk; you have to take milk shipped a long ways; all these germs have opportunity to thrive, passing through so many different hands. Get good fresh cow's milk and you can raise your babies on it, if you will use a little ingenuity. Some cows have, of course, milk that is too rich in casein; others too rich in fat, and such need modification. Use your own judgment and your sense about it, and remember to keep the cow and the baby close together.

While living in the South when the baby could not drink cow's milk at all, I used human milk. We had the negroes there to fall back on, and I have raised a good many babies by going and getting a good healthy negro wo-



man to nurse while the white woman couldn't, and in that country all of us learned to go to the negroes to raise babies. I have put babies, children 2 or 3 years old, with chronic diarrhea that is so common at that age, to nursing, and saved them and raised them by simply getting a negro wench to nurse them, and if the baby would not nurse we milked the wench and fed it.

Another matter, down here in the Arkansas Valley where I am now practicing I have used a good many goats. I like to get the negroes, but when I cannot get them I find the goat's milk agrees with the babies much better than the cow's milk does, but still don't kick the old cow aside altogether, Doctor.

**Dr. Kenney, Denver:** I quite agree with the last speaker in his defense of milk in infant feeding.

Sometimes the pendulum swings to the wrong side. I began with Doctor Winters of New York as my professor in pediatrics. I also knew a great deal of Rotch's methods, even before he began the milk modification, and have had Rotch in consultation many times while practicing in the East. I also know something of Holt's methods, and yet each and all of these men have had to back water and modify their opinion at times in the matter of infant feeding.

The fact is, that every child who cannot be fed at the breast can be fed milk, if you have patience and perservance, using such modification as seems best in the individual case. I have had many children come under my care who have been fed with the different modifications. They have been fed top milk; they have had certain dilutions; they have had such and such percentages of sugar and fat, and yet they did not do well, and the reason was, that there was too much theory and not enough common sense used in the preparation of the milk.

I believe heartily in breast feeding, and yet there are women with an abundance of milk but which is of poor quality, whose children do not thrive; they lose flesh, and if put on the bottle with milk of the proper modifications, those same children will immediately begin to gain flesh. And so I have found that in every instance when milk seemingly was not well borne, patience and stick-to-it-iveness, with the proper modification, brought every child through. I think there is absolutely no doubt about it, and I am not at all in harmony with those who would do away with milk as the article of food best adapted to the needs of infants and older children.

#### DISCUSSION CLOSED.

**Dr. Frank P. Gengenbach, Denver:** There is usually a reason for everything. There is no question that the only food for a baby is mother's milk. There are exceptions to all rules, and so we sometimes find mother's milk does not agree with the baby, but it is simply the exception. Then we find some mothers who cannot nurse their babies, and we have to give them something else, and that is the reason we have to stay by the cow, because as

a rule we cannot get goats. Very often you can get good results from goat's milk, but as a rule in a large city you cannot get the goats. There is also good reason perhaps for the chemical composition of milk, and therefore Rotch deserves a great deal of credit for letting in some light upon the chemical composition of milk, but we must not lose sight of one thing—that the most important element in milk as far as the baby's future is concerned is the proteid. Therefore we have to make sure that the baby gets enough proteid to replace the tissue which is used up and also supply the proteid for the tissue to make the baby grow. We know that the sugar and the fat are to a certain extent interchangeable and, therefore, if we get a baby who cannot stand high fat, but can stand perhaps a little higher sugar we can increase the sugar and decrease the fat, and perhaps in an occasional infant we find the opposite true.

I rather disagree with Doctor Kenney in saying that you can, if you stick to it, always find a modification of cow's milk that will agree with the baby. We must form our conclusions from our own experiences and perhaps I have been wrong—faulty in my technique—but I will say that I have found babies that cannot handle cow's milk. As a matter of fact, we know in our own experience as well as from reading the literature that certain babies do have an idiosyncrasy against cow's milk, for whom you probably never can find a milk modification that will suit. In these cases, of course, you are practically forced to wet nursing, and I am glad to hear this point brought up, because I think the Germans are far ahead of us in respect to wet nursing. They would no more think of having a children's hospital or an infant asylum without a wet nurse than they would without the infants. This is simply because there are certain infants who cannot get along on, cannot grow on and cannot assimilate cow's milk, and you have to give them at least some breast milk.

#### A WORD TO WRITERS.

When the productions penned by you  
Have made you known in every state,  
You read each flattering review  
And feel you're numbered with the great.

But don't forget that other men  
Have done as much that's worth reward.  
The sword's less mighty than the pen,  
But is the plow that turns the sword?

The scientist who bears the light  
Where ne'er before its ray was shed;  
The doctor toiling through the night  
To save, or ease an anguished bed;

The preacher with great truths to tell,  
Or he who leads where dangers lurk—  
All these, and more, have done as well,  
But have no chance to sign their work.

—April Lippincott's.

## THE IMMEDIATE TREATMENT OF FRACTURES\*

BY W. W. GRANT, M. D.  
DENVER.

By this term, I mean not only the emergency treatment, but also that of a more permanent character, which should receive prompt consideration in the early management of both closed and open fractures. The gravity and complication of fractures are influenced by the vocation of the patient, and is dependent in a great measure, upon the nature of the offending agent and the immediate environment.

These largely determine, if there is an open wound, the danger of infection from dirt and other foreign matter that may be carried into the wound. If the offending body is a moving, irresistible force, laceration and mangling of tissues are apt to be greater. What the influence of impact on tissues and the shock of a body in rapid motion, as compared with a slowly moving body of the same character is, I am not prepared to state, but when the offending agent or instrument is blunt rather than sharp, the laceration is greater and probably also, shock. The fast moving bullet seldom infects a wound or produces serious shock, unless attended with free hemorrhage, which so powerfully influences the degree of shock under all conditions. Shock is the first essentially important consideration in all severe injuries and hemorrhage and its arrest the only condition which would justify, on the spot, the immediate exploration and manipulation of wounded parts, whether of soft or hard tissues. Probing is seldom justifiable under any conditions. Rough handling and moving of a person suffering from a

severe injury and especially of the lower extremities—fracture being ordinarily the most important whether on a train, in an ambulance or on a stretcher, increases the shock, and also the hemorrhage, if important vessels are involved. Such patients should be disturbed as little as possible by noise, by a crowd or by *strenuous* efforts to give instant relief, for they but add to the gravity of the condition. The immediate surroundings are seldom favorable to the most effective treatment of shock, hemorrhage or fracture, and yet it is ordinarily safer to defer, when possible transportation to any great distance, until the immediate severely depressing effects have passed away. Ordinarily there is no shock of consequence in simple fracture, nor in the open, unless attended with considerable hemorrhage, and the patient may therefore be transported; if necessary, any distance with some fixation dressing if nothing more than sterile gauze and iodine, to the wound and the application of ordinary boards, especially a posterior splint or support, over cotton, or clothing fastened by straps or bandage. The above measures are infinitely better and safer than the meddlesome surgery so frequently invoked, with the additional disadvantages of an unclean environment. With due regard to the first few days of traumatic engorgement and swelling, the fracture should, ordinarily, be put in permanent dressing and at rest as soon as possible after injury.

Only within the last few years have fractures received commensurate consideration with the work and progress in other departments of surgery.

Now, the interest is active, and the trend to more radical surgery. Mr. Lane of London, has for years been a strong advocate of more frequent resort to operative methods in both closed and open fractures. His followers in this country have, within the last few years, rapidly increased, un-

\* Read at the annual meeting of the Colorado State Medical Society, September 25, 26, 27, 1912.

til today the operative treatment bids fair to become a popular fancy and we are certain to witness needless resort to Lane plating by preference, or to clamps or nailing, with probably some needlessly unsatisfactory results in consequence. This is the usual result of ambition and unbridled enthusiasm in the progress of scientific surgery.

At the present time it is not considered advisable to enlarge the wound nor to irrigate in compound fracture, unless dirt or some infective material is in the wound. The old maxim which considered every compound fracture as infected, is not sound nor borne out in practice. Today, unless there is evidence of foreign material in the wound, it is better to simply clean the wound surface and apply sterile dressings and iodine. In such cases, water, fingers, instruments and dressings in the wound are sometimes infective media, notwithstanding the ordinary measures of cleanliness.

Shock should be treated by rest and quiet, external dry heat, heart and nerve stimulants in moderation, salt solution if there has been hemorrhage—otherwise not.

Plating or fixation is not only justifiable but demanded in certain open fractures, especially of the long bones. Not every case may require it, but whenever reasonably good adjustment is not effected and maintained, it is imperative. This rule holds good with closed fractures; in the latter, no other condition will justify a resort to the knife, or to plating, wiring or clamping. When we convert a closed fracture into an open one, it is with the admitted danger of infection, slower healing of the bone, and a longer convalescent period, which attends all *direct* methods of fixation. By scrupulous cleanliness, exact and skillful technic and most favorable environment, infection is usually avoided, but it is not uncommon, no matter what explanation may be given.

In an open fracture the danger of infection is, of course, greater; not only because it is an open wound but for the reason that the agent in the infliction of the injury is more violent and more destructive to the soft parts, while soiling of the wound is not uncommon. When the fragments are plated, wired or pegged under such conditions, infection may be anticipated. When it occurs, recovery will not ensue until the artificial appliance is removed, and with it often, necrosed bone. The plate or other foreign material used in all such cases, should, therefore, be removed in a few weeks; as soon, in fact, as the reparative process (which progresses though slowly, in spite of the mild local infection) has produced a measure of fixation of the fragments. In these cases I have some doubt as to whether the direct application of any apparatus to the fragments is as good and safe as the old clamp and screw of Parkhill, modified by Freeman and others. The greater measure of safety is, it seems to me, with the latter, for the reason that it requires no direct manipulation of fragments nor increased local trauma of the parts, less callus, and when applied, the pins or screws have no direct or necessary connection with the wound and end fragments which are firmly held by the appliance. The danger of infection would, therefore, be lessened, and if present, less violent and prolonged, with probably less danger of rarefying osteitis. Some surgeons operate immediately; others from one to three weeks after injury, late operators claiming that infection is more certain to follow the early operation, but we must remember that reduction is more difficult at a late date.

In the closed fracture, when reasonably accurate adjustment cannot be effected, the operative treatment is demanded. Under these more favorable conditions, any of the usual means of fixation may be employed with fair assurance of a favor-



able result without infection. The plaster of Paris fixation of screws by Taylor of Port Arthur and the ginlet and plaster of Paris of Lilenthal of New York have no advantage whatever over the ordinary screw and clamp, and is not an improvement on the latter.

There are certain fractures which are always difficult of satisfactory adjustment and alinement. Among these are spiral fractures, occurring more frequently in the tibia and femur, and yet, with extension and suitable splinting and management, a fairly good anatomical and excellent functional results are the rule, without operation. Fractures near and involving the joints are more important from both a surgical and medicolegal aspect. Reasonably good adjustment is the rule without operation. Oblique fractures of long bones near joints are more difficult to maintain in accurate adjustment, without operation and fixation. First in this class is Potts fracture with coincident fracture of the tibia immediately above the malleolus. While as a rule, a satisfactory functional result is obtained in uncomplicated Potts fracture, yet the fragments usually dip strongly inward against the tibia and are never in normal alinement unless the fractured ends are forcibly restored, and this can be done only by operation. If there is, at the same time, a fracture of the tibia immediately above the malleolus, we haven't the usual advantage of a bone splint, but a most difficult condition to overcome with satisfaction. A posterior trough splint with side splints or cast will usually prevent bowing of the leg in any direction, but the spreading of the ankle joint due to the inward displacement of the fibular fragments, and tearing of the interosseous ligament, with some degree of valgus, is common.

The conclusion seems justifiable, if not imperative, that severe fracture of tibia and fibula close to the ankle joint can only be

adjusted and treated with the most satisfactory results by plating by staple or with screws and clamp, with the addition of a posterior trough splint of light, porous metal or wire, to prevent bowing of the leg. In these fractures by the recognized methods of treatment "some deformity is inevitable."\*

The inside splint, or plaster cast, with inversion of the foot is inapplicable because the ordinary use of the tibia as a fulcrum cannot be utilized, and if attempted, would result in greater deformity; consequently, operation in these fractures, especially on fibula, is more urgent than under ordinary conditions.

The time and occasion will not permit discussion of details applicable to different fractures. I wish to emphasize the safety, the advantage and the comfort to the patient of suspension by cradle or pulleys in all fractures of the leg, from the femoral neck to the ankle joint.

In all fractures, the nature of the offending agent, the circumstances and conditions peculiar to both the individual and environment, must be given full consideration if we would meet the demands of the situation with fairness and justice to all parties.

In attempting to formulate some conclusions on the operative treatment of fractures, I believe we are justified in stating:

First: That the larger the external wound, the greater the danger of infection and necessity for operation.

Second: The more extensive the laceration and contusion of soft parts in open fractures—with or without comminution of bone—the greater the probability of infection, and necessity of final operation. In such cases, operation should be delayed until the soft parts are in a state of

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\*Cotton, "Joint Fractures," p. 570.

healthy repair, when bone repair will proceed more rapidly and satisfactorily.

Third: Penetration of the skin by a fragment of bone does not of itself justify operation.

Fourth: When dirt and filth are ground into the wound, operation should not be delayed.

Fifth: In open patella fractures, operation should be immediate.

Sixth: In such fractures as separation of epiphyses of long bones, especially with dislocation, operation should be immediate.

Seventh: In fracture of the tibia and fibula, immediately above the ankle joint, operation will secure the best and most satisfactory anatomical and functional result.

Eighth: Noticeable deformity and functional incompetence, not otherwise remediable, always demand operation.

Ninth: In closed fractures, operation is required in the absence of reasonably accurate adjustment and maintenance, without perceptible deformity.

Tenth: In operative cases the importance of casts or splints, and extension should be recognized as valuable aids.

Eleventh: In all fractures, the first essential consideration is to prevent sepsis

increased in these latter days; that we are justified in expecting of ourselves and our patients are justified in expecting of us much better work and better results than could be expected or obtained a few years ago.

There is no philosopher's stone nor magic wand method whereby we may hope to see and adjust with exact nicety the solutions of continuity commonly called *fractures*. However, the science of these later years has given to surgery a hand-aid more serviceable than any philosopher's stone ever dreamed of, and the art of such men as Parkhill, Lane and Murphy has blazed the trail and pioneered the field where the rest of us must follow and establish ourselves.

The purpose of this paper is a plea for the more general, frequent and repeated use of the X-Ray in emergency bone surgery and to insist that operative interference is justified in order that adjustment of disarranged parts may be accomplished with precision and maintained persistently.

It is true that we have all seen very excellent functional results in many cases where there was poor apposition or no apposition at all. Nature is ever ready with a kindly cloak wherewith to cover our mistakes, and time was when a fracture of the femur stimulated even the best surgeons to vie in securing only the least amount of shortening. Nowadays, we expect to get *no* shortening, because we are no longer satisfied with side to side union of long bone shafts.

The X-Ray enables us to get and to know when we have end to end apposition and, if necessary, operative measures enable us to hold what we get. The time has come when we can no longer manipulate our fracture until we *feel pretty fair* apposition of the shaft fragments and put the limb up in sand bags, blanket, splint, box or even plaster bandage east, trusting to

### FRACTURES ABOUT JOINTS.\*

BON O. ADAMS, M. D., PUEBLO.

There is certainly no injury to which the human body is subjected which has given rise to so much anxiety on the part of the physician and surgeon as that of fracture into and about joints.

We were taught and still teach to "always give a grave prognosis" concerning any fracture into any joint—and this is well, but I wish to submit and maintain that the probability of complete or partial destruction of function is very greatly de-

\* Read at the annual meeting of the Colorado State Medical Society, September 25, 26, 27, 1912.

luck and a little extension at various angles, and hope for a good functional result. We might get it, but we are no longer satisfied to take the element of chance involved.

Whatever other equipment we may lack, we must, if we expect to do the best work in bone surgery, provide ourselves with or have access to a well equipped X-Ray laboratory, and one of the first lessons we should learn in that workshop is that photographic plates are cheaper than surgeons' reputations or lawyers' fees.

Skiagraphs at two or more angles should always be made. A single skiagraph is often misleading. To illustrate this point, let me call your attention to this plate and then to a second plate of the same leg—taken at right angles. .

Having experienced the satisfaction of exact knowledge with reference to the character, extent and plane or planes of our fracture, we grow gradually into the habit of demanding of ourselves greater accuracy in adjustments and apposition. Whereas we were once satisfied with good functional results, we are insisting more and more that our end results, in bone repair, shall measure up to the standards of work done by our carpenter and cabinet maker and shall bear the light of X-Ray inspection.

In the last few years we see much less frequently than we used to some fellow waddling along the street with one leg two to four inches shorter than the other, or some patient asking to have an angulation from an old fracture corrected or a joint that had been stiff for twenty years made to functionate again.

This is because all of us are doing better work than we used to do. We have come to realize that if outside manipulation, traction and splints will not adjust and retain in situ the fragments of our fracture, we have recourse to a sure and safe procedure in the application of such

of the plates, staples, screws, nails or ferules as may be adapted to the case in hand. Remembering always that we must approach any operation for the application of internal bone splints with the same religious observance of asepsis as we would employ in opening an abdomen. Bone plating in simple fractures is uniformly successful and satisfactory, if done with the same care and under the same conditions as other major surgery. In a series of 63 cases of application of internal bone splints, we have but two instances, in simple fracture, in which the plate required removing. In one case, one in which the patient who had both femora fractured obliquely, developed a traumatic pneumonia. The steel strip, which was used in lieu of a regular Lane plate, was bent double by the patient's wrenching the leg in attempting to get up while in the delirium of his pneumonia. The other case was also one of double femora fracture. In one leg, there was persistent non-union, for which the plating was done. In this case the plate was left in for four months with no union. This, by the way, is the only case of plating in simple fracture in which we have ever had infection. Union was finally effected some four or five months after the removal of the plate. Moreover, it has been our experience that internal bone splints, applied either primarily or secondarily in compound fractures, have always to be subsequently removed, and it is my personal opinion that we save much valuable time and secure better end results by primary internal splinting, rather than by waiting for the repair of the open wounds and the so-called conversion of our compound into a simple fracture. I am aware that the authorities in bone work are of the opposite opinion, but our experience seems to justify immediate careful adjustment of fragments and application of such internal retention splints, plates, staples, wire, etc., as is best



adapted to the case in hand. They have always to be subsequently removed of course.

Let it not be understood that we advocate operative interference in all cases of fracture. Only in such cases as cannot by traction, manipulation and extension, be accurately adjusted and *retained*. We have plated 11% of our fractures in the last three years.

In two cases of compound comminuted fracture of both tibia and fibula, which had been plated during the present year, we have had non-union and have resorted to the process of mortising out the fragment above and below the non-union and fitting into this mortise a bone graft from the same patient. This operation has been followed, in both cases, by satisfactory union. The study of the process of bone repair in such cases is a most fascinating one. Time forbids our detailing it here and most of you are familiar with Murphy's Masterful resume of our present status of knowledge concerning that most marvelous phase of Nature's economies—bone repair.

But what I am coming to is this proposition that most of us as yet have not acquired the habit of giving to our patients and ourselves the satisfaction of the best possible results in fractures about joints. Experience and results have emboldened us to follow Lane into the internal splinting of the long bone shaft fractures in selected cases. But when we are confronted with serious fractures into or close to important joints, as the elbow, knee, hip, shoulder, etc., we are prone to be satisfied with a "grave prognosis" and to let the patient nurse the notion, which he usually has, that to open into the articulation would let the "joint-water" out and give him a stiff joint anyway. And so we are apt to leave a condyle tipped, a tuberosity displaced or an articular process dislodged, whereas a four or six penny

nail or a slender screw would hold the part in perfect apposition, reduce the callous and restore the joint. Especially is this true of the condyles and tuberosities of the limb bones. These are the structures most apt to be displaced by muscle pull and the parts most difficult to retain in position by any sort of external splint or appliance. Without the almost exact replacement of these bony structures entering into the formation of joints, there is, of necessity, a larger or lesser amount of bone bridge or callous and consequent defunctionating of the articulation.

Bone pegs and ferrules were introduced by the late Dr. Senn and have the advantage of being absorbable.

The wire nail was first used by Von Lagenbeck and first in America by Willy Meyer. Its use has so far been largely restricted to fractures of the trochanter and at the neck of the femur, but it is quite as serviceable in retaining the condyles of that bone as well as those of the humerus, although I am of the opinion that the slender screw, threaded to the head with threads as deep as is compatible with the required strength, will eventually supplant nails and pegs entirely, particularly because they admit of more accurate application.

The Y Lane plate is often serviceable in T and condyle fractures near the ankle and knee, although kangaroo tendon inserted through oblique drill holes in the fragments, is frequently all that is required to maintain perfect apposition. This material, I have used also quite successfully in retaining alinement between the head and shaft of the humerus in fracture through the surgical neck, by placing three sutures through oblique drill holes equally spaced about the circumference of the fragments.

As to the best time to select, as has already been stated, it is my opinion that, barring cases of immediate excessive swelling and oedema, the sooner operative

measures are undertaken, the better, if they are to be used at all either in simple or in open fractures.

To acquire satisfaction and success in surgery of bone repair the operator must appreciate to the fullest the necessity for a perfect asepsis; remembering always that in the presence of the soft parts about bones and especially in joint synovia, he is dealing with tissues many fold more susceptible to infection than the peritoneal structures which he encounters in doing an abdominal section.

My suggestion is that we acquire the habit of just as painstaking exactness in replacing and retaining in situ the fragments about joints as we have in the broken shafts of long bones.

The methods of Champagnere emphasizing adjustment by extension and massage and that of Bardenheuer by axial and lateral traction and counter traction, by means of weights, were in their day most serviceable and excellent methods. But Lister and Roentgen have established a new day with new standards and we must measure up to them as opportunity and experience open the way.

#### DISCUSSION OPENED.

**Dr. George W. Miel, Denver:** I am sorry not to have had some intimation of this earlier; but just a few moments ago I was asked to open this discussion, so that my part, I am afraid, will fall far short of the requirements.

Both of these papers appear to me to be especially commendable. They seem to cover concisely and well the subject in hand.

The statistics given by Dr. Adams are a matter of congratulation to us, to see in the operative treatment of so many of these fractures such uniformly good results. These statistics are quite at variance with those generally offered. Unfortunately in this matter of operative treatment over the country in the hands of good operators, statistics vary materially, so much so that in Bellevue hospital I believe there are only one or two out of the some 19 or 20 surgeons doing this work that obtain results which compare with these given by Dr. Adams. I remember very distinctly the presentation by Dr. Martin a

year ago at Denver, in the meeting of the American Surgical Association, of a series of plate cases; with skiagrams shown on a screen, the results in many instances, seemingly anything but encouraging, and I believe, Dr. Martin held this opinion. It would seem operation especially in closed fractures, is being rushed into to the disadvantage perhaps of a number of patients, and to the disadvantage in a way of surgery. It can be seen, nevertheless, that the matter is one of appreciation; that if certain operators have good results, almost invariably the others who lack in their results might be expected under better technique to bring these cases into more commendable aggregation.

In hospitals a good deal of this work is relegated after operation to the ward; even the place of operation is not always selected with best advantage, though it seems rather well known that the question of sepsis is apt to be one of importance with ward patients.

Without generalizing I will take up then the question of the X-ray feature. We can pass over the need of X-ray; we all know that X-ray is needed, but in taking these pictures the matter of the relation of the member to the body and the body to the light as used should be accurately recorded, to be able to read the plates with advantage.

The time of operation has been very well handled by both essayists. I will pass to the discussion on Dr. Grant's paper for a moment simply to say that from my experience which has been somewhat considerable, I have yet to find in a closed fracture at the ankle joint the need of operative procedure; that is, insofar as plates are concerned.

(Time called.)

**Dr. Maurice Kahn, Leadville:** Dr. Grant has so fully covered his ideas, and likewise my own, regarding the operative treatment of fractures, that I feel there is little left for discussion.

As a matter of emphasizing what Dr. Grant has already said, I should like to mention one thing relative to environment: the furor that recently seems to have taken hold of the surgical profession throughout the country relative to operative treatment of fractures, I think has gone to an extreme degree. Unless one is well equipped—I do not mean only in hospital facilities with well trained assistants, though this is of the first importance—but also by special training in bone work, one had better leave bone surgery alone. We can not go into bones with the impunity that we enter the peritoneal cavity. The medulla is particularly prone to infection, and in serious injury to the soft parts infection occurs easily here also.

One reason why many men are running into operative treatment is through insufficient training, resulting from insufficient teaching in our medical schools of what may be accomplished by the nonoperative methods of treatment. The well trained man can get results in many cases from the so-called ordinary



treatment of fractures or non-operative treatment, which the untrained man does not get. Of course the general practitioner gets a great many fractures in the ordinary run of work. If he is well trained, has had some hospital experience, the results he gets are very satisfactory. I have had a number of compound fractures that I have treated by the ordinary methods, even under advice to operate, and the results have been eminently satisfactory.

If apposition and alignment can be secured without operation, then the ordinary treatment is indicated and will be found satisfactory in most cases. If, on the other hand, reduction is inadequate, and one has angulation that is not correctable, (this occurring especially in older fractures) or there is a spiral twist, or axial rotation, then operation is indicated and should be performed, but by one trained and competent to do such work.

**Dr. George H. Stover, Denver:** Conservatism is always a wise thing. There is the danger of rushing into operative treatment of fractures to too great an extent, but the treatment of fractures is becoming more and more a surgical procedure. It will be more a surgical procedure by far ten years from now than it is now. I think it will be a good while before the pendulum swings too far. You hear a good deal of criticism against the operative treatment of fractures on the part of men—I am not taking a shot at any speaker—who are not provided with the means of diagnosing their cases, who are not taking the trouble to prepare themselves to do it properly, who are not capable of doing the operative work, or who do not realize the responsibilities which are upon them in the treatment of fractures. I think that in ten years from now there will be ten times as many fractures treated by operation as there are now.

As to methods of treatment I may say more a little bit later. I want to emphasize the statement with which you all seemed to agree, that the X-ray must be used in the examination of fractures. It must be used a great deal more than it is. No man has a right to treat any fracture, or any suspected fracture, now, without having had an X-ray examination made if such is possible, and it is possible with the most of men to whom fractures come. You do not have to have an extensive equipment. A small portable machine will enable you to examine most of the ordinary fractures of the extremities that come in the usual run of business. You will of course not expect with those things to do the more technical work in the stomach and in the lungs and all that sort of thing, but you won't have the time for that anyhow. The man who is practicing in the smaller towns or in isolated places and who cannot have access to a man who gives his whole attention to X-ray work should prepare himself to use the X-ray for ordinary fractures, and he can do it very nicely, getting a small machine, and practicing a while on his own hands—provided he does not practice too much on them—in learning the technique. He can get very good information that way, and he will find that he will

deliver a great deal better class of goods to his patients. It will cost work and money to learn, but if you haven't an expert handy, it will be worth while.

I want to say a little about some of the methods of the bone treatment of fractures. I do not think one ought to rely on the Lane plate to hold a long bone in line. Its office is to keep apposition. You must depend on your external splint largely to keep the bone in line, and in a great many of the fractures where the Lane plate is now used it is unnecessary. If you will cut into the irreducible or difficult-reducible fracture, put it into good apposition and put it in splints it will not be displaced, and you do not need to put a foreign body in. Of course I am not asking for the total abandonment of these splints. You must remember that it is a foreign body, and that a foreign body is not always a desirable thing.

**Dr. Leonard Freeman, Denver:** I think there is no more important subject than this subject of fractures. I think it is proper to say that the general run of practitioners over the country are completely up in the air as to what they are to do about certain forms of fractures. If you can get a good result by ordinary means, without operation, for heaven's sake get it; but if you cannot get a good result, under control by the X-ray, then an operation should be done, provided the surroundings are proper and that the individual who does the operation has had a reasonable amount of experience in such work. Dr. Grant, and also Dr. Adams, have put this thing very admirably in their papers. Dr. Grant had something to say about the internal clamp, or Lane's plate, and the external clamp, as popularized by Dr. Parkhill in this part of the country and elsewhere, which I think is very excellent. So much has been said about the Lane plate in recent years that I think we are in danger of losing sight of the external clamp, which would be unfortunate. The advantages of an external clamp are these: in the first place, it is much easier to apply, with much less manipulation of the tissues and consequently less danger of infection. In the next place, and this is an advantage of importance, it is much more readily removed, without giving an anesthetic and without doing what the patient regards as a dreaded operation. In the next place the screws, which are as small in diameter as the screws used in the ordinary plate method, can be put just as far as you please from the seat of fracture, entirely in sound tissues if you wish, thus doing away with the dangers of having any foreign body too close to the line of fracture, and also doing away with the danger of delayed union which is apt to come in these cases.

With this clamp you leave in no foreign body. With the Lane plate you do leave in a foreign body, unless you take it out by an operation afterwards, which very often has to be done. In addition these external clamps hold the bone fragments more firmly than do the internal plates, in spite of what you might theoretically think to the contrary. If you will observe the clamp which I exhibit you will see



that it holds very firmly the fragments of wood in which it is fixed. If you examine the other exhibit—a Lane plate—you will find that the fragments have more movement. The external clamp does not produce any more inconvenience than the internal, because it is external, the only thing that is internal being the screws.

The greatest objection that has been raised against the external clamp has been the danger of infection. That danger might be immediate or it might be late. The immediate danger of infection is no greater in the external clamp than it is with the internal clamp providing that the operation has been an aseptic one. If the operation is not a clean operation then the danger is equal. But on the other hand the after results are less to be feared with the external clamp than with the internal, because we have the screw holes for drainage. As regards the later infection, that comes on, if it come at all, very late, and then it is trivial in amount; and by the time it arrives the screws have formed separate granulated channels for themselves, which wall them off from the surrounding tissues and prevent the infection of the general wound, just as with silk-worm gut sutures, through and through the abdominal wall to close a wound, we do not fear infection. The chances are even greater for infection with sutures, because of the strangulation of the tissues by the silk-worm gut, which does not occur with a screw, standing as it does loosely within the tissues.

Dr. O. S. Fowler has made some experiments in this connection. He has inserted screws into the bones and found that within three or four days a channel of granulating tissue had formed. Dr. Hillkowitz examined the specimens. I do not mean to say that external clamps are applicable to all cases. Internal clamps are applicable to some, especially near the ends of bones, and external clamps to others; but we certainly should not lose sight of the advantages of the external clamp, which is used, by the way, perhaps much more abroad than it is here, its advantages being well recognized in many foreign countries.

**Dr. Horace G. Wetherill, Denver:** We all admire consistency and I want to call attention to the fact that Dr. Stover is not consistent. If there is one thing I have heard Dr. Stover contend for more than any other, it is that a man should be able to interpret an X-ray plate. The difficulty about equipping the general practitioner with an X-ray machine and letting him take his own X-ray plates is that he is not going to be able to interpret them accurately, and this is very necessary. I know of a case in point. A little boy had a broken thigh. He was under the care of two excellent men, and a careful X-ray examination of the bone was made. After the bones had been brought together, under an anesthetic, another X-ray examination was made and the ends appeared to be very much out of line. The patient was given an anesthetic and the bones were again adjusted; another X-ray examination was made and the

bones were still shown out of line. This was repeated, and a short time after another X-ray showed the bones still out of proper position. An operation was decided upon, and was done by one of our best surgeons. The thigh was opened; the bone was examined and found to be in excellent position. Nothing was done to it whatever; the wound was sewed up and the boy got well, with a perfectly good and symmetrical leg. I am not criticising Dr. Stover; he knows that I have the highest regard for his ability as an X-ray expert. In Denver we are extremely fortunate in having such men as Dr. Stover and Dr. Childs to cooperate with us. But the X-ray picture is not the sort of thing the novice or a person who is not accustomed to it can interpret for himself. It needs a very careful, and very skillful interpretation, by such an expert as Dr. Stover is known to be.

I should like to speak of a matter referred to by Dr. Adams, that is the importance of using bone grafts for certain pathologic conditions, and particularly for ununited fractures. As Dr. Adams has said Murphy has shown us how much may be done in this particular way. Many ununited fractures of given time will ultimately make good union. Murphy has, however, pointed out that notwithstanding perfect apposition and that there may be no factor which we are able to fix upon as preventing union, yet in some of these cases without anybody being at fault non-union will occur. In a case of this kind bone grafting often does good. It is useful too in other cases. I have a little boy in one of the hospitals in Denver, who had osteomyelitis nearly a year ago. He had a necrosis of almost all of the shaft of the tibia and about two-thirds of it was removed as a sequestrum. It has been reproduced with the exception of a gap of perhaps two inches where the periosteum was destroyed, and there has been no reproduction of bone at all at this place. I expect to take a graft from the other tibia within the next week and transplant it into that gap.

This is a very interesting process. The graft is not osteogenetic. It does not produce a new bone and it is ultimately absorbed. It simply acts as a scaffold or a temporary bridge, to carry the blood supply and the haversian canals from the end of one bone to the end of the other. Murphy calls it osteoconductive, which is a much better name.

**Dr. R. W. Corwin, Pueblo:** I want to corroborate the statements made by Dr. Adams in regard to the work that he has done. I have had an opportunity of witnessing this excellent work. It might be added we never use plates when external means will suffice, but when external means will not hold the bones in place, which is proven by the X-ray, plates are resorted to. Where infected cases have come to us we have occasionally used plates to advantage from the beginning of the treatment; in spite of the plate the bones have united and the parts healed.

With regard to the use of iodine, as spoken of by Dr. Grant, I cannot emphasize its use too strongly. Applications of tincture of iodine,

I believe, is the best thing we have at our command for first dressings in most cases. Use it freely. It is a question whether it is wise ever to extend the wound, unless it be a puncture wound. In addition to iodine, balsam of Peru can often be used to advantage in open wounds and deep cavities, where there is suppuration. It will stop infection. We have proven it in the pathologic laboratory.

With regard to the movement of the patient, it is a very serious matter and should be carefully considered. Visiting of friends should be prohibited as far as possible. Noises that disturb the patient are inexcusable. Loud talking in the patient's room, by relatives, nurses or doctors, should be considered criminal.

**Dr. S. B. Childs, Denver:** From an X-ray standpoint there are three classes of fractures that are brought to us for examination. In one class the alinement is satisfactory, and no question arises as to the proper treatment by external appliances. In the second class there is no doubt about the propriety of an open operation. In the third class, the doubtful class, there is question as to the proper treatment, and I know of no class that requires greater experience or keener judgment in devising the proper methods of treatment. Experience in subsequent examinations of cases of fracture in which the X-ray plate has demonstrated that the fractured ends have not been in what would ordinarily be called fair apposition, have proven excellent clinical results. I realize this is a dangerous point to talk about because cases of this nature might come out with very serious results, but I want to call attention to the fact that although the X-ray plate in some cases, shows the ends of fractures in only fair apposition, if the axis of the shaft is in good alinement, providing, of course, there is no tendon or muscle fiber between the ends, union will take place with a good clinical result.

There is one other point to which I have called attention several times in our societies and it would seem that it did not need further emphasis except from the fact that we are even today frequently asked to make fluoroscopic examinations of fractures, which I always refuse to do. A fluoroscopic examination of a fracture in the neighborhood of a joint may be not absolutely unreliable, but it is capable of doing a great deal of harm, because you cannot get the correct idea, and you may overlook a fracture which will appear only upon the plate. I want to emphasize the fact that a plate should be made, either stereoscopically or else, as Dr. Adams has emphasized, from two directions, so as to get the full view of the fracture, for it is a permanent record of the condition at the time.

**President Jayne:** If the society pleases, call was made for Dr. Stover a moment ago, and I recall since I made my ruling that Dr. Stover did not occupy his full five minutes, and he still has a minute and a half in which to speak, if the society so desires.

**Dr. George H. Stover, Denver:** Really I feel that it is hardly necessary for me to defend myself before you men, but just let me men-

tion one or two points. Suppose you are making an X-ray plate or shadowgraph of a fractured bone, and your plate shows the ends of the bones in the position indicated thus: (Fig. 1.) Does anybody think that the ends



Fig. I

of the bone that made that shadow could possibly be in the position indicated thus? (Fig. 2). Certainly not. If the X-ray examination

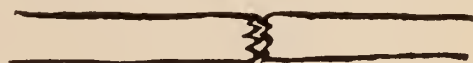


Fig II.

were made in only one direction, and in a direction at a right angle to the direction from which Fig. 1 was made, you would get a plate like Fig. 2, but the case which has been brought into discussion was examined by exposures at right angles to each other and the deformity illustrated in Fig. 1 was found in one of the two plates, not only once, but in each of seven different examinations. Another thing; suppose that the surgeon in the case is very reluctant to operate, and delays for weeks; you will remember that it doesn't take long for callous to appear and round off the rough corners; finally the surgeon cuts down onto the bone, runs his finger along the bottom of the incision and doesn't feel any sharp corners, closes up the incision and says the bone is straight. Is he right? No. What he felt with his finger was smooth callous. There wouldn't have to be any shortening even in a case like Fig. 1. Another thing: suppose later that the man who X-rayed that bone and stated that apposition was not good, made repeated attempts through a period of nearly five years to get another skiagram of the leg after the operation and met with opposition from all quarters and never did succeed in being allowed to make another examination, what can be said? What's the use?

**Dr. Frost C. Buchtel:** In the closing discussion I should like to have Dr. Adams tell us, if he will, how many of the compound fractures that he plated gave perfect unions without the removal of the plate. It certainly is a very exceptional experience that he has had in plating compound fractures. The experience of everyone is that such plates do not stay in. To follow out Dr. Miel's discussion, it is rare for a Pott's fracture to have to be



wired or plated. If one knows how to put on a Stimpson splint correctly and gets the foot pulled sufficiently around internally, he gets a good result.

In the immediate operation upon fractures of the patella it is a question whether that is preferable to waiting for several days until there is more resistance in the joint cavity. For the sake of completeness I think the Lillienthal plate ought to be mentioned. The Lillienthal plate is a combination of the Freeman clamp with the Lane plate. It is merely a Lane plate with two little holes at each end of the plate through which a wire is inserted, and this wire is allowed to extend out through the skin. Then instead of using screws, one uses screws with a shank, and this screw is inserted into the bone. In that way you have your plate coming immediately against the bone, which, most people believe gives better support to the bone. Then when one desires to remove the plate it can be removed exactly as the Parkhill clamp can be removed and the plate can be removed by pulling on the wire. Another scheme of Dr. Lillienthal's, if one does not happen to have a Parkhill clamp, is to use gimlets; one puts a gimlet into the bone and detaches the handles from the gimlets, then winds wire around the shanks of the gimlets and secures the whole thing by a roller bandage or plaster of paris. This gives practically the same fixation that the Freeman clamp gives.

**Dr. Leonard W. Ely, Denver.** First a few words on the subject of Pott's fracture, which Dr. Grant mentioned. I believe that if a Pott's fracture is put up in proper shape, a bone operation is practically never necessary. The trouble is in most of this fracture work that we have been confining our attention to different forms of splints of which we read in a book, and then we attempt to hang the splint on the limb, as if the splint in itself would accomplish some purpose. Now, in a Pott's fracture if the foot be put up in extreme adduction, inversion and dorsal flexion, the result is practically always a perfect one, not only functionally but anatomically. The Stimson splint is excellent, but it is a little more difficult to apply than an ordinary plaster bandage. If the patient pull with a bandage his own foot up into place, the circular plaster bandage can be applied in about five minutes. It is very simple, and holds the foot perfectly easily. The operative treatment of fractures is a protest against the routine methods into which we had fallen. When I was in the medical school, our course on fractures consisted very largely of descriptions of different splints, which no one could possibly carry in his mind. The impression that we carried away was that for any given fracture, the treatment consisted in hanging some splint on that we could read about in a book.

The treatment of fractures is a mechanical problem. If it is impossible to get a fragment of bone back where it belongs we can often carry the limb up to meet the fragment. If the tuberosity is torn off the head of the humerus, and we cannot crowd it down, we can easily bring the head of the humerus up

to meet it, by abducting the arm. What we ought to do is to make up our minds exactly what is to be done, and then go and do it. If we cannot reduce a displaced bone fragment manually, and hold it in place by our dressing, then an open operation is in order, but I am sure none of us would ask for an open operation of a fracture of his own bone, until he were sure that the reduction and retention could not be accomplished otherwise.

Possibly the slip-slog way that we have treated fractures in the past is responsible for the great number of damage suits. I believe that the man who sees a fracture once or twice a year should pass it up, as he would an abdominal operation.

#### DISCUSSION CLOSED.

**Dr. Bon O. Adams, Pueblo:** In consideration of the lateness of the hour I had meant to surrender my time. Dr. Frost Buchtel has evidently misunderstood me. Twice, in the paper I said, that we have never been able to leave a plate in a compound fracture. But in simple fractures we have never had to remove but two plates. I think I must have been misunderstood. I want to emphasize since I am on the floor, two other things. One, suggested by Dr. Wetherill's child patient. And this point has not been made yet that in children the process of bone repair differs materially from that of adults. In children we must preserve every portion of the periosteum; in adults this is quite unnecessary, because the bone in a child grows from the periosteum and in the adult it grows from the medulla and the endostium. Those are things brought out, as I suggested, in the study of the osteogenic process in the repair of bones, but we did not attempt to go into that. There is one thing above all others that must be observed for successful bone surgery. We must keep in mind the fact, that I tried to emphasize that the soft parts about the bones and especially the synovia, require very much more careful preparation and very careful asepsis more than any other major surgery, and I say other major surgery because all bone surgery comes under the class of major surgery. On account of the disarrangement of the program I will surrender the remainder of my time.

**Dr. W. W. Grant, Denver:** We must never forget that a perfect anatomical or skeletal adjustment is not at all necessary to the most perfect functional results. We may have considerable displacement of the fragments with union and yet have perfect muscular results, and but for the X-ray we would not know but what there was a perfect adjustment of the fragments.

Mr. Lane contends that asepsis and technique are more difficult and absolutely of more importance in bone surgery than in abdominal surgery, and the conditions which he lays down are so extreme that you should not even put a gloved finger into the wound; the conditions which he prescribes are such that he would prevent anyone except one who has devoted so much of his time to it, as he does,



to do bone surgery. I hardly think this necessary. I should not hesitate, and never have, to put a clean finger with a glove on it the wound of the joint or of a bone, and this I do every year of my life. I think in that respect he goes to such an extreme as to make it most difficult to do operative surgery on fractures.

The bone graft spoken of has been used by a New York surgeon and by Dr. Murphy. Dr. Murphy contends now that the early operation is attended very much oftener with infection than later operation. He says very recently that Mr. Lane agrees with him in this, so they postpone operations for from one to two or three weeks, even in cases where it is manifestly needed, in a compound fracture. Under other conditions where we can prescribe the conditions of asepsis and operative procedure in a clean case, then these conditions are not so precise nor so urgently needed.

I want to state in regard to Potts' fracture, Mr. Lane said years ago emphatically, and still maintains, that there is no such thing as a perfect restoration of those fragments without operation, and I agree with him thoroughly in this. I have never seen a Potts' fracture—a real Potts' fracture—within three inches of the tip of the malleolus, in my life treated without a widening of the joint unless it was operated on. That does not preclude excellent functional results, which we usually get without operation. But add to this a fracture of the internal malleolus and the ordinary process of inverting and adducting the foot is absolutely impossible. You cannot use it at all, and therefore you will find that the operative procedure in these cases is much more urgent than under ordinary conditions. The ordinary Potts' fracture is the most difficult fracture to adjust that I know of without operation, because in these cases the lower fragment is always thrown violently inwards, and also usually the upper fragment. The patient will recover with a severe depression of the fragments at that point, with a very good functional result, but as I have stated, quite uniformly with some degree of valgus. This, however, does not incapacitate the individual for most excellent and useful work.

#### A WONDER.

College President—You can't get into our college. You aren't qualified in the entrance requirements in Sanskrit, Greek, or Calculus.

Prospective Student—No, but I am very grounded in reading, writing and arithmetic.

College President—Great Scott, man, you don't need a college education! Why don't you go into business.—Puck.

**LAST CALL FOR VOLUNTEERS FOR THE PROGRAM OF THE NEXT MEETING OF THE STATE SOCIETY! SEND NAMES AND TITLES OF PAPERS TO DR. W. T. H. BAKER, PUEBLO.**

## A NEW AND APPARENTLY ACCURATE MODIFICATION OF THE WASSERMANN REACTION.

BY WARD BURDICK, M. D.  
DENVER.

*Consulting Bacteriologist to the National Jewish Hospital for Consumptives.*

In all reports bearing upon the Wassermann-Neisser-Bruek reaction, there is a universal agreement that in a goodly percentage of unhealed cases of lues in the third stage, the reaction results negatively. For this reason this valuable and important test cannot be absolutely relied upon as an aid in differential diagnosis in this stage of the disease.

The above fact has given rise to numerous attempts to work out a more refined method of serum diagnosis than the original one of Wassermann. I will only speak of the most important of these in a brief manner, as they are well known. In order to avoid an excess of amboceptor, Baur refrained from the use of rabbit immune serum and employed for the reaction only the native amboceptor usually present in human serum. M. Stern employed active serum in order to obtain the complement therefrom, thus doing away with the necessity of using guinea-pig serum as complement. Later the idea of employing both the complementary and hemolytic properties of human serum in the reaction originally advocated by N. A. Tschernogubow was put on a practical basis by H. Hecht.

While the elimination of two foreign substances, the guinea-pig serum and the artificial anti-sheep amboceptor, simplified the original Wassermann reaction, it at the same time brought about increased

\*Read before the Medical Society of the City and County of Denver, January 24, 1913.

danger of unspecific binding, since the exact complement and native amboceptor content of a giving serum is an uncertain quantity and cannot therefore be depended upon as constant constituent elements of human serum. However, from the well known work of Stern and Hecht, it has been shown that complement is present in fresh human serum in fairly constant and sufficient amounts and also that anti-sheep amboceptor is usually present in variable amounts. Only in two or three per cent of serums are they present in insufficient amounts and in babies under six months of age they are absent entirely.

\*Brendel has, in a large series of experiments upon the hemolytic properties of human serum, made numberless observations and as a result originated his method upon which I am about to report. By his method the fresh, active serum is titrated with varying dilutions of sheep blood corpuscles to determine its exact inherent hemolytic power and only such an amount of sheep blood corpuscles used in the test as are completely hemolyzed in a given length of time by the serum under examination. It is of course necessary that the complement of the luetic serum be fixed in the presence of an antigen, just as guinea-pig complement is anchored in the Wassermann reaction. The experiments which were carried on after the publication of Hecht's article, led to the discovery that binding of the native complement did in fact take place in a similar manner to that which occurs in the Wassermann reaction. The anchoring of human complement however, takes place much more easily and far more intensively in the presence of antibody, than does that of the guinea-pig.

It has also been demonstrated that luetic antigen works in a much stronger man-

ner upon human complement than it does upon guinea-pig complement and that the use of it in doses of the same amount as is used in the Wassermann reaction leads to unspecific binding. It would seem that upon the coming together of organ extract with human complement, without the intervention of two components of a foreign hemolytic system, as in the case of the Wassermann reaction, the self binding attributes of organ extract come plainer into view. At any rate it is necessary to observe great care to reduce the amount of antigen decidedly. It should not exceed or at least very little exceed in amount, one-third of the original Wassermann dose.

Formerly, Brendel used as antigen the alcoholic extract obtained from luetic foetal liver, but he soon came to the use of the watery extract previously treated with ether made according to the method of Fritz Lesser, which is as follows: Normal (fat free) heart muscle, either guinea-pig or human (in this series of tests I have used guinea-pig heart) is ground fine in a meat cutter and triturated finely in a mortar with sea sand. This is covered with a liberal amount of ether and shaken with glass pearls for five hours. It is then allowed to stand over night. Next day the ether is filtered into a porcelain dish. The filtrate must be quite clear. Get as much filtrate as possible without squeezing the puree. The ether filtrate is now evaporated over a water bath at 47 degrees centigrade until a permanent residue remains which must be free from the odor of ether. The residue is now taken up with 100 c. c. of a 0.5% solution of phenol in normal salt solution and shaken with glass beads for several hours until a fine emulsion is formed. The whole is strained through medium fine gauze. There should result a milky fluid which will keep for months unchanged at room temperature. In a successfully made ex-

\*Brendel and Muller: *Munchener Med. Wehnschr.* 1912, No. 32, Aug.

tract there should result no flocculency from standing.

Since using this aqueous organ extract, Brendel has proven the correctness of the observation of a number of workers, viz.: that watery organ extract gives an increased number of specific bindings and also agrees with Stern that human complement is very sensitive to the influence of alcohol which has a marked weakening effect upon it. It has also been observed that watery extract is far less liable to produce post-hemolysis in positive reactions upon standing, as often happens in the case of alcoholic antigen. For use in the Brendel reaction, organ extract must be titrated out with the most painstaking care. It is very important that it be titrated with at least five different serums as follows: Serum known to be non-luetic, serum one plus according to Wassermann, serum three plus according to Wassermann, serum four plus Wassermann and serum which has been markedly positive, according to the Wassermann method, but which has become negative as a result of therapeutics. The dose of organ extract which should be used is the largest dose which binds completely in the presence of positive serums, provided double the amount does not bind the complement in the presence of a known negative serum.

The technique which I followed in the beginning of this work was that used by Brendel himself. This has however, during the course of my work, been modified somewhat in a manner which I think is an improvement.

Ten test-tubes about 12x1 cm, in size are placed in a row. This size tube is used in order that the comparatively small volume of fluid used in the test will assume a column longest in its vertical diameter which facilitates the final readings. The tubes are marked from one to ten to indicate in tenth cubic centimeters the corpuscle content of each tube. Into each

tube is placed 1 cc., of 0.9% salt solution. Into tube No. 1 is now placed 0.1 cc. of 2½%, washed sheep blood corpuscles, in tube No. 2, 0.2; in tube No. 3, 0.3 and so on up to 1 cc., in tube No. 10. Into each tube is now placed exactly 0.1 cc. of fresh, unheated serum to be tested. (By repeated experiments I have arrived at the fact that two drops from the average capillary pipette, such as is used in blood serum work, when held at an angle of about 50 degrees, with just enough pressure exerted upon the teat to promote the collection of the drop at the point of the pipette, is equivalent to 0.1 cc.)

The tubes are now slightly agitated to insure the mixture of their contents and placed in a water bath at 37 degrees centigrade for exactly ten minutes. At the end of this time they are all removed and observed.

In the vast majority of cases the hemolytic power of the serum under observation will be revealed by this titration in terms of tenths of a cubic centimeter of the 2.5% solution of sheep blood corpuscles which have been completely hemolyzed during the ten minute incubation. The serums which I have thus far tested have shown an average hemolytic strength of 0.45 cc. This titration reveals a source of error in the Baur and Hecht systems in which the individual serums are not titrated as to their specific hemolytic powers. Upon this titration rests much of the merit of the Brendel reaction. By it we arrive definitely at the exact hemolytic power of the serum which we are testing and unlike Baur and Hecht, we only expect of a given serum that which it is able to perform.

Occasionally we find a serum very rich in hemolysin which will hemolyze 1 cc. of a 2.5% sheep corpuscle suspension in much less than ten minutes. It is then necessary to carry the titration on up to perhaps 2cc. and over in order to find its ex-



act hemolytic power. Thus we expose another fallacy in the Baur and Hecht reaction which does away with artificial amboceptor for the purpose of avoiding an excess. An active serum may in itself, contain an enormous excess of hemolysin thereby defeating this purpose. On the other hand a serum may be so poor in hemolysin that one-tenth cubic centimeter of it will not hemolyze the one-tenth cubic centimeter of sheep blood corpuscle solution in tube No. 1. In this case it is necessary to titrate 0.2 cc. of the serum in the same manner as described for 1 cc. I have thus far found it necessary to use .2 cc. of serum in only 10% of serums worked with. Two per cent of serums worked with were found to be so poor in hemolysin as to be incapable of hemolyzing 0.1 cc. of the sheep corpuscle suspension when used in 0.2 cc. amounts. In this case the serum is unfit for use in this reaction.

Hecht's proposed method by which in case of hemolysin absence a foreign negative serum rich in native amboceptor be added, is to be regarded as unreliable, since by it a new and unknown principle enters into the reaction, rendering it difficult and inaccurate.

Having by the above described titration arrived at the exact inherent hemolytic power of the serum under observation, the test may be carried out in the following manner: Into four tubes marked A. B. C. and D., is pipetted 1 cc. of saline solution as was done in the titration tubes. Into all four tubes is pipetted 0.1 cc. of serum (0.2 cc. if the previous titration calls for that amount.) Into tube "D" place the previously determined dose of antigen, double the amount of which must be used in case it is necessary to use double the amount of serum. These are now placed in the water bath and incubated for twenty-five minutes, in which time, in case the serum contains luetic antibody, the complement will become fixed in tube "D."

Complement is more or less thermolabile. This susceptibility to heating is more marked in some serums than in others. The twenty-five minute exposure to incubation temperature may therefore be expected to lessen the hemolytic power of the serum to about three-fourths that indicated by the titration. Therefore, at the end of the twenty-five minute incubation, tubes "A," "B," "C" and "D" are removed from the water bath, whereupon tube "A" receives three-fourths the titrated dose of sheep corpuscle suspension and is returned to the water bath for ten minutes, at the end of this time being removed and observed. If complete hemolysis has taken place in tube "A," tube "B" may be discarded. If, however, complete hemolysis has not taken place in tube "A," tube "B" receives three-fourths of the corpuscle dose which failed to hemolyze in tube "A" and is incubated ten minutes. I have never observed hemolysis failing to take place in tube "B," which in fact seldom need be resorted to, tube "A" usually showing complete hemolysis in ten minutes.

This observation being completed one may proceed to the test, tube "C" being the control tube and tube "D," which contains the organ extract, or antigen, being the reaction tube. As we approach this final step of the test, however, we are confronted by still another anti-hemolytic factor with which we must reckon. It is a well known fact that organ extract antigen, when brought into contact with the other elements of the fixation test, causes a certain amount of weakening of the hemolytic properties of the serum. This is either due to a self-binding action on the part of the serum itself or upon an anti-complementary action of the organ extract. It is therefore necessary to make allowance for this by still further reducing the amount of sheep blood in tubes "C" and "D" to three-fourths the amount



fragment of complement cannot produce hemolysis. Therefore the results obtained are exceedingly accurate and clear cut. A slight binding which cannot be detected by the original Wassermann, can readily be determined by this test.

I desire to report results of a series of one hundred tests (Fig. 1) done by this method and controlled by the original Wassermann. While my series does not show as high a percentage of positive results as Brendel reported in his original paper, there is, however, a striking correspondence. It must also be taken into consideration that his series comprised 1193 reactions, against 100 of mine. Again, thirteen of my series were known negative cases.

Fig. 1.—Results of 100 Brendel reactions controlled by the original Wassermann.

All of my eighty-seven cases classed as positive were proven either by anamnesis, previous or subsequent positive Wassermanns, microscopical or clinical findings. As with all other modifications of the Wassermann reaction it must be acknowledged that this reaction cannot replace the original Wassermann by reason of the fact that a small percentage of serums, two per cent I have found, have no inherent hemolytic properties and are therefore not suitable for this reaction.

Brendel states that he has made the following observations: First, that a positive finding according to this test is detected earlier in a fresh infection than by the Wassermann. Secondly, that a positive serum becomes negative earlier by the Wassermann than by the Brendel as a result of therapeutics. Again, that the Brendel test reveals the existence of slighter amounts of syphilitic poison in the blood than does the Wassermann. Lastly, that the Brendel shows the positive return after therapeutics earlier than does the Wassermann, thereby not only often being the

precursor of a relapse, but the forerunner of a similar result with the Wassermann reaction.

From the comparatively limited experience which I have had with the reaction to date, I feel justified in stating that the Brendel reaction is the only accurate active serum modification of the Wassermann thus far devised. The success of the test depends largely upon a properly made aqueous organ extract antigen also the care and accuracy with which the organ extract is titrated out.

I desire to acknowledge my indebtedness to Dr. S. Simon, with whom I am associated, for many valuable suggestions during the course of this work, and also to Miss Gertrude Hanrahan, technician in our laboratory, for much valuable assistance in carrying out the work.

Metropolitan Building.

## Constituent Societies

### COLORADO OPHTHALMOLOGICAL SOCIETY.

The regular monthly meeting of the society was held on March 15, 1913, in the office of Dr. D. A. Strickler, Empire building, Denver. Attendance, 17.

Dr. W. C. Bane presented a case of herpetic ulcer of the cornea, which had cleared up once after treatment, but had recurred.

Dr. D. H. Coover presented a case of trachoma in a boy of ten years. The interesting feature of the case was a marked entropion of both lower lids, the lashes lying flush with the lower part of the cornea, which presented moderate vascular pannus.

Dr. C. E. Walker presented a case of complete atrophy of the optic discs, the nerve heads being paper white and the patient entirely blind. The patient had had syphilis and was tabetic.

Dr. H. Aufmwasser presented a case of rupture of the choroid. The case was unusual in that the rupture, instead of being concentric with the disc, ran horizontally from the disc to the peripheral nasal and temporal portions of the fundus. The patient had been struck on the eye in boyhood with a toy arrow.

Dr. E. Jackson presented a woman on whose right eye anterior scleral trephining had been done for the relief of acute glaucoma which had not yielded to eserine. The operation had



been combined with iridectomy. Pain had been relieved, and the pupil was smaller than it had been made by eserine.

Dr. H. R. Stilwell presented a case of opacity at the posterior pole of the crystalline lens, both eyes being affected. The opacity was probably of the nature of a remains of the hyaloid artery. The right pupil had been permanently dilated for four years.

Dr. E. E. McKeown presented a case of penetrating injury by a piece of steel. The X-ray plate had shown the foreign body to be 32 mm. back from the anterior surface of the cornea and 9 mm. to the nasal side of the median line of the eye. This would place the fragment in the orbit behind the eyeball. Vision had improved in four weeks from light perception to 20/30.

Dr. W. F. Matson presented a case of probably traumatic cataract in a woman of twenty-two years. There was a history of a severe blow on the forehead over the eye seven years previously, which had been followed by loss of sensation in the region for a year. The patient had again struck her head against the casing of a door in January of this year.

Dr. D. A. Strickler presented a case of neuroretinitis in a man with specific history. The patient had been on mercury and iodide, and vision had slightly improved.

WILLIAM H. CRISP.  
Secretary.

#### TELLER COUNTY.

The Teller County Medical Society met in regular session Tuesday evening, March 25, 1913, in the offices of Dr. C. E. Elliott in the Red Cross hospital in Victor and was called to order by the President, Dr. Chas. Howard.

The following physicians were in attendance: Drs. J. B. Polly, Evans, Elliott, Schoen, Howard, Jones, Dinsmore, Parker, Dunwody, Brinton, Hayes, Thomas, King, Katherine Polly and McIntyre.

The meeting took the form of a clinic and the following cases were shown: One case of an undiagnosed bladder condition in which Dr. King demonstrated the use of the cystoscope. One case of a fractured pelvis which had been operated upon to control hemorrhage which at the present time, some five weeks after the injury, was doing nicely. Another case of fracture of the pelvis of four weeks' duration which developed a hypostatic congestion at the base of the left lung.

Other clinical cases were reported by the doctors present.

The society then adjourned to meet one month later with the Cripple Creek doctors, when we will have a medical clinic.

THOS. A. MCINTYRE,  
Secretary.

#### EL PASO COUNTY.

The regular meeting of the El Paso County Medical Society was held at the Antlers hotel Tuesday evening, March 12th, at 8:15 p. m.

The following members were present: Drs.

Tucker, Brown, McKinnie, Grover, Mahoney, Swan, Reed, Watt, Loomis, Wilson, Arnold, Cooke, Peters, Daniels, Boyd, Martin, Rothrock, Gillett, McClanahan, Gilmore, Trossback, Hanford, Depeyre, Timmons, Webb, James and Gilbert.

The minutes of last meeting were read and approved.

Dr. Gillett's report on entertainment of Dr. Evans was read and accepted; number attending, 37; cost, paid (\$17.30.)

Dr. Gillett spoke of the entertainment of the National Public Health Association which meets here next summer, and asked for two members to be added to the entertainment committee. After discussion it was voted by society that the entertainment committee be empowered to solicit subscriptions from the people of Colorado Springs to meet the expenses.

Drs. Magruder and Loomis were appointed by the President to assist the Entertainment Committee.

The following card was received from Dr. McKinnie: "Mrs. McKinnie and her children wish to extend to the members of the El Paso County Medical Society their appreciation and thanks for the beautiful wreath of roses, and the sympathy of which they were the expression."

Committees were appointed to draw up resolutions on the deaths of Dr. McKinnie and Dr. Gildea.

Committee for Dr. McKinnie: Drs. Rothrock, McClanahan and Gilmore. For Dr. Gildea: Drs. Swan, Loomis and Watt.

Program.—Dr. Boyd read a paper on whooping cough and it was generally discussed.

Dr. Van DerHoof and Dr. Stewart were elected to membership.

Dr. Depeyre discussed the advisability of having a collection agency established for the doctors that they may be protected from fewer losses by having a statement of standing of the people of Colorado Springs. It was discussed by Mr. Meloin, a man familiar with the business, and it was left for investigation by a committee to be appointed by the President. Society adjourned.

The following endorsement for Dr. Grover was drawn up by Dr. Cooke and carried by the Society, March 11th, 1913:

We, the El Paso County Medical Society, do hereby endorse the candidacy of Dr. B. B. Grover as Commissioner in the coming city election, with a view to his becoming Commissioner of health and sanitation, and we further state we believe this position should be filled by one of the medical profession.

#### OURAY COUNTY.

Ouray, Colo., March 3, 1913.

Meeting of Ouray County Medical Society called to order at 8:30 p. m. in Dr. L. G. Crosby's office, Crosby acting as chairman, Slick, secretary. Present: Crosby, Towers and Slick.

Minutes of previous meeting (April 1, 1908) read and approved.

A letter from Dr. Melville Black, secretary C. S. M. S., directing Dr. Crosby to take steps toward revivifying the society in Ouray county read. In accordance with this letter the meeting was called.

Moved by Slick that officers be elected for 1913. Carried.

Officers elected: President, G. N. Towers, of Ridgway; Vice President, W. W. Rowan, of Ouray; Secretary, B. B. Slick, Ouray. As delegate to state meeting to be held at Glenwood: L. G. Crosby, of Ouray; alternate, Dr. Cummings, of Lake City.

Meeting adjourned at 9 p. m.

G. N. TOWERS, President.

B. B. SLICK, Secretary.

#### CITY AND COUNTY OF DENVER.

The applications of Drs. Calkins and Sperry were received and referred to the Board of Censors.

The following resolution introduced at the last business meeting was then read:

Whereas, The chief business of meetings of the **Medical Society of the City and County of Denver** is the reading of scientific papers, and the discussion of the same; and

Whereas, In a large Society, where there are many listeners, some with subnormal hearing, the presence of smoke in the atmosphere adds to the difficulties of the speakers; and smoke is disagreeable to many members and decidedly detrimental to some; and

Whereas, The majority of our Society already abstain from smoking in our meetings and the practice is quite unknown in some of the largest medical societies of the Eastern cities;

Resolved, That smoking in the scientific and business meetings of the Society is declared to be hereafter a breach of the good order of the Society, which the members and the presiding officer are required to avoid and prevent.

Presented by Drs. Jackson and Levy

Dr. Jackson read a series of letters from officers and active members of Eastern medical societies relating to subject matter of the resolution. Dr. Ely questioned the statement regarding the New York Academy of Medicine. Discussed also by Drs. Hartley, Carmody, Walker and Craghead. Dr. Walker moved as an amendment that the resolution be operative until the summer vacation as an experiment, seconded by Dr. Gibson, discussed by Dr. Pratt. The amendment was lost. The original prohibiting smoking was then put to a vote and carried.

Dr. W. A. Jayne spoke on the question of endowment funds for the library. On his motion a vote of thanks was extended to the corporation of the Denver and Gross College of Medicine for gifts to the Society. Dr. Taussig spoke on the question of the formation of a pathological museum in connection with the Society. A motion was carried to have the matter considered by the Board of Trustees to report at the next business meeting. Dr. Jayne also spoke of the hope for

increased room and facilities for transaction of the business of the Society.

March 4, 1913.

#### PUEBLO COUNTY.

February 19, 1913.

The regular meeting of the **Pueblo County Medical Society** was called to order by the Vice President, Dr. F. W. Singer. There were fourteen present. The minutes of the previous meeting were read and approved.

A communication from the Rocky Mountain Public Health Association regarding the bill before the present State Legislature was read and referred to the Legislative Committee with power to act for the Society.

The Legislative Committee reported in reference to the communication read at the last meeting of the Society from Dr. Ames that they had supported House Bill 49.

Communications from Senators Thomas and Guggenheim in regard to the Owen bill were received and filed.

A communication from Dr. Brown of the National Hospital Association regarding tariff on hospital supplies was received and filed.

A communication from Mr. J. E. Campbell offering the Society the use of their present rooms free of charge for the coming year was received, and the Secretary of the Society was directed to acknowledge the communication and express the Society's appreciation to Mr. Campbell.

A bill from the Franklin Press, ten dollars (\$10.00) for printing programs, was ordered paid.

Dr. C. W. Thompson was admitted to membership by ballot of the Society.

The Membership Committee reported favorably on the application of Dr. Gardini.

The program of the evening was "Constitution," by Dr. L. MacLean, and the discussion was opened by Dr. William Senger. The paper consisted of a series of pertinent questions, and brought on a very wide and free discussion by the whole Society.

Adjourned.

J. H. WOODBRIDGE,  
Secretary.

#### SAN LUIS VALLEY.

The regular meeting of the **San Luis Valley Medical Society** was held at Alamosa, February 26th. Twelve members were present. After a banquet given by the Society, the regular work of the Society was taken up. The minutes of the previous meeting were read and approved.

Dr. Shelton gave a demonstration of the Bower-Hecht modification of the Wassermann test. The fact was demonstrated that this test can be made without much outlay of laboratory equipment.

Dr. Herriman of Alamosa read a paper, "Every-day Practice in Eye, Ear, Nose and Throat."

Dr. Smith of Alamosa read a paper, "A Consideration of Venereal Diseases." His paper



was well prepared and brought out considerable discussion of the best methods of controlling this class of diseases and the advisability of teaching children in the home of their nature and dangers.

Officers for the ensuing year were elected as follows:

President, Dr. Pollock, of Monte Vista; Vice President, Dr. Morse, of Alamosa; Secretary-Treasurer, Dr. Herriman, Alamosa; Delegate, Dr. McKibben, Creede; Alternate, Dr. Morse, Alamosa.

Five new members were elected to membership—Drs. Moninger, Shelton, Horton, Howell and Chambers.

It was decided to hold the meeting in the future at Alamosa, as that would be the most convenient point for the majority of members.

L. L. HERRIMAN,  
Secretary.

#### PUEBLO COUNTY.

March 4, 1913.

The Pueblo County Medical Society met in regular session at the Society rooms Tuesday evening, March 4, 1913, Vice President Dr. E. A. Elder presiding. There were twenty-two present.

The report of ex-Treasurer Singer was postponed until the next meeting.

Mr. Weber of the Credit Men's Association, addressed the Society concerning the proposed garnishment law now pending before the State Legislature. Resolutions condemning this proposed law were adopted and ordered sent to our representatives and senators.

Dr. Luigi Gardini was elected to membership.

Dr. R. H. Finney read the paper of the evening on the subject of "Rheumatic Fever in Children." The paper was highly appreciated and was followed by many discussions.

A proposed amendment to the Constitution was introduced by Dr. Epler, abolishing the office of First and Second Vice Presidents. This constituted the first reading.

The Society adjourned.

J. H. WOODBRIDGE,  
Secretary.

#### CITY AND COUNTY OF DENVER.

The Board of Censors reported favorably on the name of Dr. Rose K. Beere. By the ballot the applicant was elected.

The first paper of the evening was by Dr. Leonard Freeman, on "Advice to be Given Surgical Patients on Leaving the Hospital." Dr. Freeman referred at some length to the fears entertained by the average patient regarding the necessity of a very careful regulated life, following the strike regime instituted in connection with hospital treatment. He pointed out that much of this fear was based on a fallacy and that freedom from worry was very important as regards the patient's future welfare. The actions and advice of friends of the patient, the author

pointed out, was frequently the cause of much trouble, and he spoke of various methods of counteracting it. In conclusion, Dr. Freeman stated that "the simple life," as we ordinarily understand it, was most to be desired for a patient recovering from a surgical operation. Dr. Sewall spoke of the difference between the opinions of surgeons and medical men regarding such advice. Dr. Sewall fears that too early activity might result in harm, particularly in cases where infection was pre-existent. Discussed by Drs. Elder and Crisp.

The second paper was by Dr. Childs, on the "X-ray as an Important Factor in the Diagnosis of Gastro-intestinal Lesions." Dr. Childs' remarks were almost totally in connection with the lantern slides exhibited, of which he showed a large series. Various conditions as shown by the X-ray were exhibited and the author pointed out the conclusions to be drawn from each plate. The paper was discussed by Dr. Stover, who spoke of the reliability of the method and pointed out that certain information was thus gained that was impossible by other means. Discussed also by Drs. Freeman, Sewall, Fowler and Preston. February 18, 1913.

#### CITY AND COUNTY OF DENVER.

The Board of Censors reported favorably on the application of Dr. F. P. Reed. The vote taken was favorable. The name of Dr. Rose Kidd Beere was proposed for membership and referred to the Board of Censors.

Dr. McGraw presented a patient whom he had previously shown to the Society, exhibiting the results of nerve-anastomosis following a stab wound in the neck. The patient shows progressive improvement.

Dr. Miel presented a patient showing the results following operative treatment for fracture of the patella, with excellent functional results. Dr. Miller Preston referred to the technique used in the case.

Dr. Bane showed a pathological specimen, an eye which he had removed for sarcoma of the ciliary body.

Dr. Lazelle showed an X-ray plate from a case of gonorrheal esustosis of the head.

The first paper of the evening was presented by Dr. W. E. Spitzer on "Prostatectomy, the Surgical Error of the Present." A careful study of the prostate shows three divisions—anterior, middle and posterior. The middle division contains all the glandular tissue, which under certain conditions becomes adenomatous, and without operation carcinomatous. Surgically treated, the gland itself is not removed, but rather this obstructing adenoma. Some cases are best operated supra-pubically, others perineally, and some by intra-urethral work. The author pointed out particularly that an increase in size felt by the finger in the rectum does not necessarily mean obstruction, and vice versa. Dr. Spitzer makes a plea for more careful diagnostic measures and especially for the use of the urethroscope in the hands of competent men. The paper was discussed by Drs.



Howard, Fowler, Davis, Lyons and Kleiner. Dr. Spitzer closed.

The second paper of the evening was presented by Dr. Lindahl on "Membranous Angina, the Pneumococcus as Etiological Factor," with a report of two recent cases. Dr. Lindahl referred to the literature on the subject, explaining that though membranous angina associated with infections by the staphylococcus usually in poorly nourished children were fairly common, that such cases had not been noted where a pure culture of pneumococcus had been isolated.

In two cases recorded by the essayist a pure culture of the pneumococcus was found by Dr. Mitchell.

The temperature in these cases ranged from 103 to 104 F. The pulse over 100. No glandular involvement, with recovery complete in nine and ten days respectively. In the treatment salines were given, also P. D. No. 2 nuclein sol. in teaspoonful doses. The throat was swabbed alternately with tincture iodine and 1 per cent. formaldehyde in boric glycerine. As a gargle 25 per cent. alcohol in hot water was employed.

February 4, 1913.

## News Notes

### NEWS NOTES.

Dr. and Mrs. M. J. Keeney of Pueblo took a vacation in California during the month of March.

The president of the Colorado State Medical Society, Dr. J. A. Black, has been in Hot Springs, Ark., for the month.

Dr. J. M. Perkins, health commissioner of Denver; Dr. William H. Sharpley, president of the Medical Society of the City and County of Denver and state senator, and Dr. Miller Preston have announced themselves as candidates for Commissioner of Social Welfare. This commissioner, under the new form of government Denver is to assume, will control the health department.

Dr. Aubrey H. Williams has returned from a short trip to the Panama canal zone.

Dr. and Mrs. H. G. Wetherill have planned to spend the summer and perhaps a still longer period in Europe.

Dr. Arnold Stedman, for a long time the recognized dean of the Colorado profession, died on March 22. His end came suddenly, as he had wished it, while at work. He was at the bedside of a patient when the fatal stroke ended his long, useful and upright life. In the last issue of Colorado Medicine there appeared an interesting paper of Dr. Stedman's, containing his recollections of the rude beginnings of medical practice in Colorado.

Dr. and Mrs. P. V. Carlin have returned from their sojourn in California.

Dr. W. W. Grant was a guest of the Chicago Medical Society in March. On being requested to read a paper, he selected for his

subject "Woody Phlegmon." He took to Chicago with him a patient with woody phlegmon of the abdominal wall.

Governor Ammons has received congratulatory telegrams from scores of medical men throughout the country for signing the tuberculosis registration bill. Wires were received from J. Prentice Murphy, secretary of the Boston Children's Aid Society; L. H. Stone, Boston Tuberculosis Association; Sherman C. Kingsley, Elizabeth McCormack Memorial Fund for Children; James Minnick, Illinois State Association for Prevention of Tuberculosis; Dr. H. E. Dearholt and Dr. M. P. Ravenel, Wisconsin Anti-Tuberculosis Association; Livingston Farrand, Association for Study and Prevention of Tuberculosis.

Dr. Patrick F. Gildea, of Colorado Springs, died in California on March 6. He had been a resident of Colorado Springs for twenty years.

Governor Ammons has appointed Dr. Frank Rogers, Denver; Dr. Charles B. Dyde, Greeley, and Dr. Luke MacLean, Pueblo, to be members of the State Board of Medical Examiners.

Dr. W. P. Harlow, dean of the University of Colorado Medical School, has been appointed a member of the committee on education and pedagogy of the Association of the American Medical Colleges.

Dr. Crum Epler, Pueblo, has equipped a first class X-ray laboratory.

Dr. B. B. Grover has been endorsed by the El Paso County Medical Society for a city commissionership. The purpose of the endorsement is to place the city health department in Dr. Grover's hands.

## Book Reviews

**Obstetric and Gynecologic Nursing.** By Edward P. Davis, A. M., M. D. Professor of Obstetrics in the Jefferson Medical College, Philadelphia; Obstetrician to the Jefferson Hospital; Obstetrician and Gynecologist to the Philadelphia Hospital; Consultant to the Preston Retreat; Member International Society Obstetricians and Gynecologists; American Gynecological Society, etc. Fourth edition, thoroughly revised; 12mo of 480 pages, with 97 illustrations. Buckram, \$1.75 net. W. B. Saunders Co., Philadelphia and London, 1913.

This book is admirably adapted to the needs of the trained nurse, and has been thoroughly revised to include all the newer procedures. The thought which is foremost throughout is the duty of the nurse. The knowledge she needs about obstetrics and gynecology is presented clearly and simply, and is properly related to the understanding of her own field of work—a thing which is not always true of books written for nurses.

The book was first copyrighted in 1901, and has been revised for the third time. The author has had, in the intervening years, a wide experience in hospitals, and the co-op-

eration of hospital superintendents and chief nurses. His revisions show evidence of a careful study of and response to the needs of the student nurse. A. D.

April 6, 1913.

**Cardiovascular Diseases. Recent Advances in Their Anatomy, Physiology, Pathology, Diagnosis and Treatment.** By Thomas E. Satterthwaite, A. B., M. D., LL.D., SC.D.

Within the last few years our knowledge of cardiac physiology and pathology has received very substantial additions. Beginning with the discovery of the auriculo-ventricular bundle named after His, work was stimulated and contributions were made by Keith and Flack and Tawara and others. Clinically, Mackenzie, by his careful work, was a pioneer, to be followed by Lewis, Wenckebach, Cushny and Einthoven. The use of instruments of precision and graphic records has added not a little to the burden of him who tries to keep abreast of the times. There have appeared lately a number of volumes co-ordinating the new with the old.

The present volume is offered as a condensed account of the newer conceptions in cardiac physiology and pathology. Beginning with a discussion on "Recent Discoveries Relating to the Anatomy and Physiology of the Heart," there follow chapters on Sphygmomanometry and the other instruments of precision, Cardiac Arrhythmias, High Frequency Currents in Arterio-sclerosis, Uses of CO<sub>2</sub>, Mobility and Malpositions of the Heart, Cardiovascular Thromboses, Myocardial Disease and Malignant Endocarditis.

The author makes no mention in considering malignant endocarditis of the work of Osler, Libman and others on infective endocarditis. His conception is that of twenty years ago. The statement that "Among pathologists it is believed to be a simple endocarditis which has become infected by 'poisonous germs,'" is reminiscent. A delicate compliment is paid our serologist friends in the statement that "In case of failure with one brand of serum another brand may be successful." Encouragement is offered Wright in the following: "I have been impressed with the idea that Wright often gets remarkable results, and that bacterial therapy has probably come to stay." R. W. A.

**The Career of Dr. Weaver.** A novel. By Mrs. Henry W. Backus. Cloth, decorative, illustrated; 12mo., pp. 373; net, \$1.25; postpaid, \$1.40. Boston: L. C. Page & Co.

"The Career of Dr. Weaver," written by Mrs. Henry Backus and published by Page of Boston, is hardly likely to take rank as a work of literary merit and the interest in the story itself must depend largely on the taste of the reader.

There are two doctors of the same name, and although Dr. Jim, the younger brother, is evidently intended to be the hero, it is the older brother, the villain of the plot, whose name gives the title to the book. The scene of the story is laid in some nameless

city, presumably in the East, and we are led through a maze of vague descriptions, pointless conversations and flat scenes in which self-conscious heroes and even more self-conscious heroines are the chief figures, until we reach the stopping place.

Dr. Weaver, we are told, is a man of marked ability and brilliant attainments whose moral sense has become perverted by his eagerness for fame and fortune. Yet it seems scarcely likely that any man with such ability or education should have been led into villainy of such a glaring and melodramatic quality.

But the moral tone of the book is good and its ideals excellent, so we conclude that it is only doubtful taste on the part of the authoress that leads her to place her heroines in such peculiar situations. Nina Bird, Dr. Weaver's office assistant, is thirty years old and beautiful; Dr. Jim, his brother, a few years younger. Yet, "Nina had a maternal fondness for Jim which she would occasionally show by running her fingers through his hair, or putting a caressing arm about his shoulder, and Jim was fine enough to understand just what Nina meant by such abandon." Later on the same lady, who is in love with Dr. Weaver, and with whom he has been in love, attempts to rouse his jealousy and win him back by frequenting a café of doubtful reputation with a man of whom the doctor disapproves. Nina retorts that Mrs. Cleves, one of the doctor's aristocratic patients, was there, but the doctor explains that she was acting as chaperone to a slumming party.

And these are only two of any number of such incidents throughout the story.

The book was apparently written with a view to effecting reform in some matters relating to medical ethics. The fee-splitting doctor, the abuse of the public clinic, and the medical reprint obviously used for advertising purposes, are spoken of with much contempt, as they doubtless should be. But the force of the book remains negative after all. It seems scarcely likely that any young man of average ability or moral strength would be led astray by this example; or that any man of ability who had already fallen from grace in such a way would be brought back into the straight and narrow path of right doing by the perusal of Dr. Weaver's Career.

EDITH C. MALINS.

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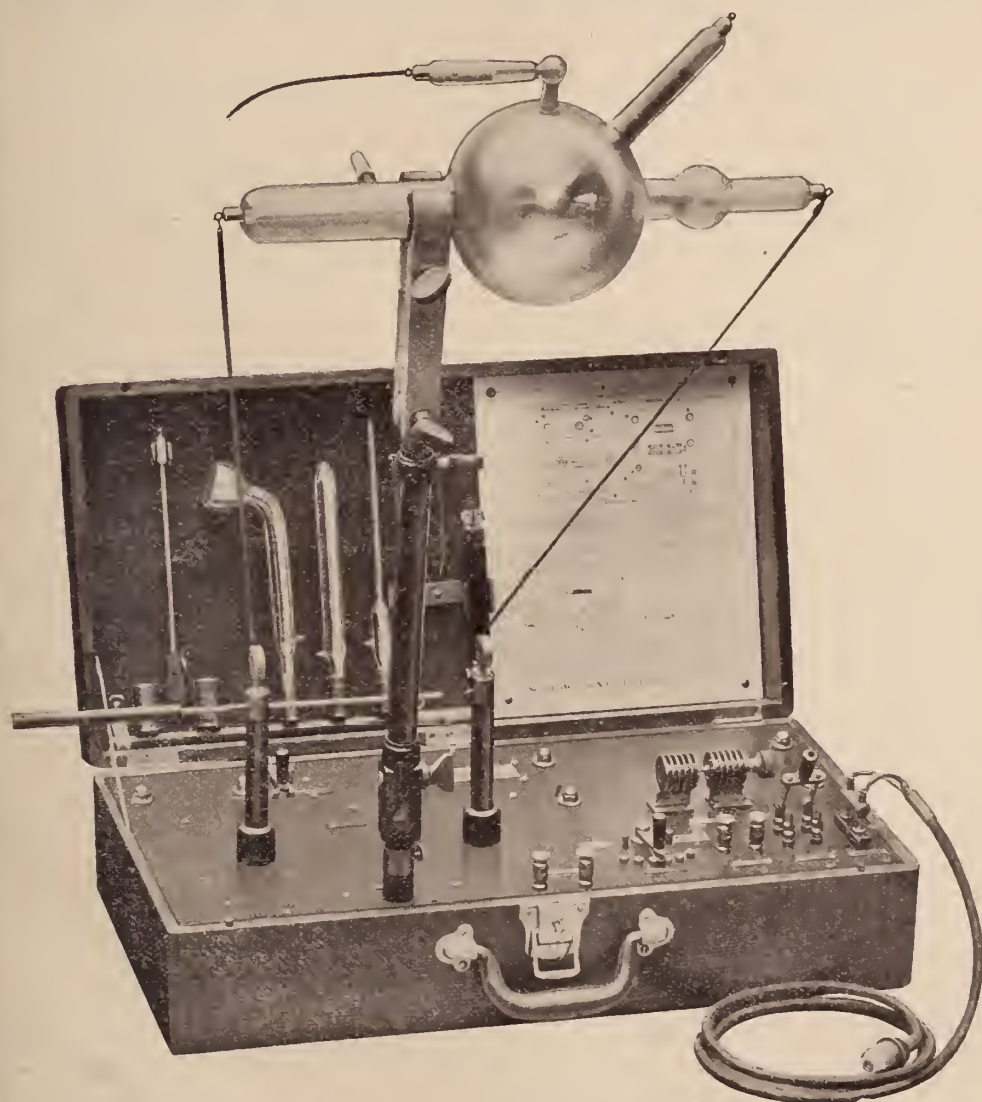
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1916—A. G. Taylor, Grand Junction; J. C. Chipman, Sterling.  
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**Publication:** C. S. Elder, Chairman, Denver (1913); Edward Jackson, Denver (1914); Geo. A. Moleen, Denver (1915).

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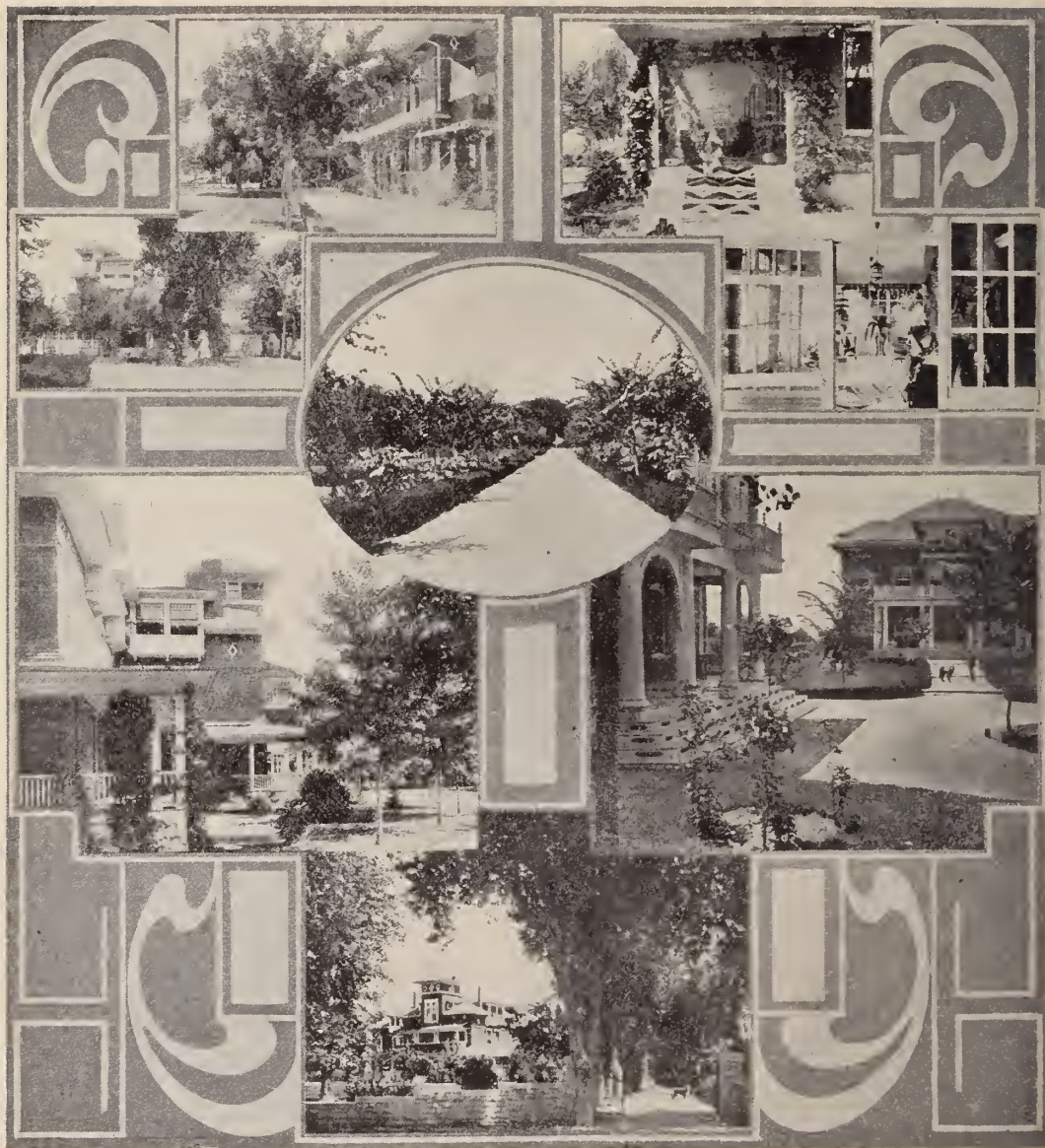
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EDITOR, Charles S. Elder, M. D., Metropolitan Building, Denver

Annual Subscription, \$2 00. Single Copies, 20 Cents

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MAY, 1913

NO. 5

## Editorial Comment

### CONGRESS ON SCHOOL HYGIENE.

Under the patronage of the President of the United States, the Fourth International Congress on School Hygiene will be held in Buffalo, August 25th to 30th.

As this is the first convention of its kind ever held in America, and the program a most comprehensive one, the interest of the profession in general is earnestly solicited.

Few propagandas appeal to physician and layman alike with greater eloquence than the movement to promote better sanitation of our schools. The approaching congress will not only cover this important feature of preventive medicine, but will also consider the sociological aspects of school life, the management of the feeble-minded and the problem of the exceptional child.

Delegates will attend from all the leading nations, from every college and university of note in this country, and from various other educational, scientific, medical and hygienic institutions and organizations. The congress is further open to all persons interested in school hygiene. Membership may be secured on the payment of a five-dollar fee. Applications should be sent to Dr. Thomas A. Storey,

College of the City of New York, New York City.

### IMMUNITY FROM DIPHTHERIA.

Cable dispatches to the lay press bring us the information that Prof. Emil von Behring of the University of Marburg in a lecture before the Congress of Internal Medicine recently held at Wiesbaden announced a new antidote for diphtheria consisting of a mixture of toxin and antitoxin. From the preliminary tests it would appear that it is harmless and that in contrast to the old antitoxin which gave but a brief and often unsuccessful immunity this preparation affords an immunity prolonged and lasting. This new serum has been offered to certain hospitals for impartial trial and further observation.

### SPECIAL TRAIN TO THE AMERICAN MEDICAL ASSOCIATION.

The endeavor has been made to arrange for a special train to the meeting of the A. M. A. at Minneapolis. This can be done provided 75 can be secured who would patronize such a train. It is proposed to supply a splendidly equipped train of sleepers including a buffet club and library observation cars, which will be run on a special schedule. To meet with the desires of the greatest number it seems best to arrange to leave Denver at 3 p. m.,

Sunday, June 15th, to arrive in Minneapolis, Monday, June 16th, about 5 p. m.

The Denver County Society at its meeting of May 6th, by motion, endorsed the plan proposed by the Union Pacific and Chicago Great Western railways and inviting the county societies of the state to join in making such a special train to be known as the "Colorado Special" possible.

Previous sessions of the National Association have shown a registration of from 30 to 50 members and it is believed that this number will be increased when the pleasure of traveling in a body is realized, and with the ladies accompanying the members, there should be little question as to the possibility of securing the required number.

Tickets will entitle a return by way of Kansas City with stop-over privileges, thus affording an opportunity to stop at Rochester. Tickets should, however, be purchased to read via Kansas City, both ways, which will be honored via Omaha or on the Special Train.

Further information will be addressed to the members of the various County Societies individually and reservations should be made early, in order to assure a sufficient number to secure the Special.

Colorado has always been well represented in these meetings and it is thought that by this means this year should exceed in number previous delegations from this state.

The profession at Minneapolis are sparing no effort or expense to make the entertainment features of the session especially attractive, and with the usual high order of the section meetings should promise a profitable, as well as a pleasurable time.

---

"The humanity which prevents human suffering is a deeper and truer humanity than the humanity which would save pain or death to animals."—Charles W. Eliot.

## *Original Articles*

### *INTESTINAL DIVERTICULITIS.\**

DAVID P. MAYHEW, M. D.  
COLORADO SPRINGS, COLO.

Since your committee assigned me the subject of intestinal diverticulitis to present at this meeting there have appeared two excellent articles on the subject by members of the staff at Rochester, the last having been published in the Journal of the American Medical Association on September 14th. For me to follow these very recent papers which cover the ground completely, would seem a work of supererogation. I can do no better under the circumstances, I believe, than detail the history of my only case, and, using it as a text, point out those various features which are clinically of importance.

The patient, whom I first saw in consultation with Dr. J. H. Brown, who had already made the diagnosis and to whom I am indebted for notes of the case, was a man of 52, 5 ft. 6 in. in height, weighing 172 lbs., who had always been in good health except for a period of several weeks in 1906, when he suffered from soreness of his lower abdomen. This discomfort having subsided, he was troubled no more until about the first of April, 1912, when he became constipated and was enabled to evacuate his bowels only on alternate days with the aid of cathartics. This continued for about three weeks, when, on April 18, he was conscious of an uncomfortable sensation in lower left abdomen to which he paid no attention. Two days later he was suddenly seized by a severe lancinating pain in the abdomen to the left of the median line and slightly above the pubic spine, radiating to the back. The pain after the first was intermittent, coming on every

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\* Read at the annual meeting of the Colorado State Medical Society, September 25, 26, 27, 1912.



three or four hours and lasting about twenty minutes. During the pains he was chilly and nauseated. The temperature rose to 105° and pulse to 120.

Examination made at onset revealed nothing but a rigid abdomen. This condition persisted for two nights and a day, gradually subsiding. On the second and third days the rigidity had disappeared, but nothing abnormal could be made out except a localized tenderness to the left. On the fourth day a tumor the size of an orange was palpable in the left inguinal region extending into the pelvis, firm, tender and immovable. It was not palpable by rectum.

A proctoscopic examination revealed nothing. The blood showed a moderate leucocytosis of between 10,000 and 11,000. Increased temperature persisted. The tumor gradually increased in size during two and a half weeks, when it had attained a bulk half again as large as at first. At this time he began to pass mucopus with very offensive stools, *but neither then nor at any other time was there blood.* This persisted for about four days, after which the tumor began gradually to decrease in size. Improvement was slow and the movements of the bowels which at first were painful ceased to be so. This improvement, however, was not lasting. It continued for about two weeks, when pains again increased and the tumor began to enlarge. At the same time the mucopus reappeared in the stools. This recrudescence of the disorder reached its maximum in about four days when a gradual subsidence again began, to last for another period of about two weeks. This succession of periods of acute discomfort and comparative ease continued until the end of July. During all this time his blood count continued as before, the red cells at about 5,000,000 and the whites at 10,000 to 11,000, and his weight decreased by only two pounds. He was, however, feeling the drain of the long-contin-

ued illness and realized the fact that he could expect no relief without calling surgery to his aid, and so, on July 24th, he allowed us to operate.

On opening the abdomen a mass of adhesions was found anchoring the omentum and intestines to the parietes and bladder, which were with the greatest difficulty broken up or dissected. A mass almost the size of the fist was finally freed occupying the last portion of the sigmoid, which microscopically appeared like a carcinoma. The gut was cut transversely above and below and reunited by an end-to-end anastomosis, as the free distal portion was so short that it could not be brought to the level of the belly wall. He passed gas freely on the second day and his bowels moved of themselves on the fourth, and all looked well for a speedy recovery. On the seventh day, however, a virulent infection of the abdominal wall manifested itself, before which in the next two days the muscular and aponeurotic tissues melted away like snow. He was not able to resist the resultant toxemia, and died on the ninth day.

This case illustrates clearly one of the commonest types of diverticulum of the intestines. As its features are so typical it will repay us to consider them in detail. In the first place the patient was a man who, though only 5 ft. 6 in. in height, weighed 172 lbs. Giffen (1) states that the patients seen in St. Mary's hospital were invariably of this type; that the average weight was 180 lbs. Dunn and Woolley (2) however, found but two of their six cases in corpulent individuals. The fact of the prevalence of obesity among those suffering from this disorder is supposed to have an etiological bearing either directly through fat infiltration of the gut or merely as a sign of involution processes. Sex determinations in 104 cases cited by Telling (3), Giffen and Dunn and Woolley 71 were men and 33 women. The age is us-

usually above 40, but several cases have been observed in children (4).

The pain such as was felt by this man is that characteristic of the disorder. Similar to that of appendicitis it differs from the latter in its localization in the left side. In fact this localization has won for it the name of "left sided appendicitis." In the reported cases the pain was frequently referred to the median line instead of the left side as in our case but in almost all tenderness was localized along the course of the sigmoid. It is variously described as a mere tenderness, a dull ache, crampy, or, as in this instance, severe and lancinating. It seems to be common to find a history of pain or discomfort preceeding by a variable time the attack for which relief is sought. Such a history, when obtained, is of importance in connection with retained weight and absence of cachexia, in the differentiation from carcinoma.

The constipation from which he suffered is a common finding, and it may be has an etiological significance, as we shall see later.

That the proctoscopic examination was negative is in accord with just expectations, for unless there be a partial or complete intussusception of the diverticulum it is difficult to conceive what of a pathological nature could be visible.

So far we have discussed the history and findings of the first three days, which, it must be confessed, have led us to nothing definite. On the fourth day, however, appeared a new feature, a mass in the left inguinal region. Such a mass is a constant finding and can usually be made out and its limits defined by bimanual examination by rectum or vagina. In this case rectal palpation was negative, but the mass at once narrowed the enquiry. Was it tuberculosis, an intussusception, a carcinoma whose bulk should have been but was not detected earlier, or a diverticulitis? The first was improbable in view of the history,

the second and third by the negative proctoscopic findings and the absence of blood in the stools. As you all know blood is of practically constant occurrence in both, for in both the mucosa is involved, and from its ulcerations blood must needs flow. (1) Against carcinoma was also the retention of weight and the absence of cachexia. Add to this the succession of exacerbations and remissions which are said to be common in certain forms of diverticula, and carcinoma could be definitely excluded, except a recent carcinoma grafted onto an old diverticulum.

The specimen removed at operation was eight inches long and of an average diameter of three and one-half inches. The bulk of the mass consisted of chronic inflammatory tissue involving all coats of the gut and of the diverticula except the mucosa. The lumen of the gut was markedly narrowed but contained formed feces. The whole extent of the involved portion of the bowel, but more especially on the external side anterior to the external mesenteric attachment, was the seat of numerous small diverticula from an eighth to a half inch in length and of flattened cross-section, evidently from the pressure of the inflammatory tissue. One, however, was globular, and contained an enterolith, ovoid in form, a half inch in length by a quarter in transverse diameter. This "stone" had apparently preserved the original shape of the cavity from the encroaching pressure of the inflammatory tissue. There was much fat in the mesentery and under the peritoneum, surrounded by the mass. Histologically no carcinoma was present. The mucosa showed low grade proliferative changes. The muscle layers had disappeared and were replaced by fibrous tissue. The condition was evidently one of long standing for such extensive changes of this character could scarcely be produced in the three months since the beginning of his acute attack. The diverticula, therefore,

must have existed for an indefinitely long period, during which they produced no symptoms, if we except the period of discomfort in 1906, which was conceivably caused by beginning changes in the previously innocuous diverticula.

This is in accord with the facts noted by other observers, that in themselves diverticula, whether congenital or acquired, cause no symptoms. That it is only when secondary changes occur that pain focuses attention upon them, as is the case with the appendix. The various types of such changes have been so admirably summarized by Hartwell & Cecil (4) that I can do no better than to quote them:

"1. There may arise an acute inflammation of the diverticulum without perforation, which results in a peritonitis or cellulitis around it. \* \* \* The formation of adhesions to neighboring parts may cause an obstruction more or less acute, either at the site of the diverticulum or in a loop of gut adjacent to it."

"2. The inflammatory process may cause destruction of the coats of the diverticulum when a perforation results, leading either to a localized abscess, a general peritonitis, a general blood infection, or all three. The perforation may communicate with other hollow viscera, notably the bladder. Telling cites a case showing submucous perforations, so that fistulous tracts formed within the intestinal wall."

"3. The diverticula may become the seat of a mild, sub-acute or chronic inflammation, which does not produce marked changes. This condition is subject to temporary exacerbations and remissions. (Giffin, (5) Mayo.)"

"4. A chronic inflammation may occur in the diverticulum which leads to thickening in the walls of the diverticulum itself, and from the irritating effects of the toxins in the lymphatics and venules, the process spreads to the surrounding tissues, resulting in thickening of the whole intesti-

nal wall and of its mesentery. When multiple diverticula are present, a long piece of gut may be involved. Here, again, adhesions may lead to intestinal obstruction, or this obstruction may result from narrowing of the lumen. Here, also, a chronic perforation may take place."

"5. Carcinoma may develop on the diverticulum."

It is evident that our case belongs in the fourth group; that the diverticula had for long been the seat of a slowly progressing inflammation with its deposit of scar tissue, and not until the resultant narrowing of the lumen of the colon had produced a partial obstruction of that viscus with an attendant acute inflammation did the symptoms become of sufficient intensity to focus attention upon the disorder. Indeed it was really the peridiverticulitis which caused the trouble and not any particular changes in the diverticula themselves.

The pathology of this condition has been well discussed by Wilson (6) and by Hartwell and Cecil (4). In the small intestine they are most frequently found "between the leaves of the mesentery," but in the colon they are more commonly arranged along the side (4), (6), (7), as in our case.

The microscopic changes in the mucosa vary from none to marked thinning at the neck of the lumen if narrowed, with either degeneration or low grade proliferative changes in the globular extremity, and this, whether the diverticulum be in the sigmoid, the appendix (8), (9), or elsewhere.

Outside the mucosa the picture of chronic inflammation presents itself with, in most cases, the disappearance of the muscle fibers. The circular fibers are the first to go—later the longitudinal. It would thus seem that the division into true and false diverticula is purely artificial, and that no matter how well the coats of the bowel are represented at first as in the "true" the



eventuality is a vanishing of the muscle and the production of the "false."

As to the etiology of this affection little is known. It seems to be the consensus of opinion that for some reason there is a weakening, congenital or other, of the bowel wall, and that when some undue pressure occurs there is a yielding of the wall at the weaker portions. Age, increased fat deposit in the walls, long continued constipation, venous congestion, may all play a part in some particular case.

While diverticula of the sigmoid are the only ones presenting at any time a definite clinical picture enabling a diagnosis to be made, yet as you know they may be present in any portion of the gastro-enteric tract, from the œsophagus to the rectum, and in the opinion of Franke (10) are the cause of many obscure disorders of the intestines. He, and others, also point out the fact that they may be often mistaken for carcinoma.

The treatment is purely surgical, but time forbids a discussion of the various procedures. I would refer you to the recent article by Charles H. Mayo, which covers the ground briefly but thoroughly (11).

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## THE DESIRABILITY OF ABDOMINAL EXPLORATION.\*

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Abdominal exploration may be made deliberately, with nothing else in view; or it may be made in connection with an abdominal section done for some other definite purpose. The former is called an *exploratory laparotomy*, while the latter may be termed an *incidental exploration*. The occasional necessity for exploratory laparotomy is universally recognized, but the constant desirability of incidental exploration has not received the attention it deserves.

As long as people have internal lesions which may best be treated surgically, and as long as abdominal diagnosis is as uncertain as it is at present, just so long will there be a positive indication for exploratory laparotomy, especially where diseases and injuries which threaten life are suspected, such as cancer, rupture of hollow viscera and certain acute inflammatory conditions. This should not be considered an opprobrium upon surgery, but simply an acknowledgement of the limitations of our science—just as any other branch of knowledge is limited at every period of its evolutionary progress towards perfection.

Every exploration should be undertaken, however, with great caution and reservation, remembering that no operation is without danger, and that surgical intervention which is uncalled for, or which fails to relieve, is in the nature of a grave misfortune. Hence the best obtainable consultation should always be sought, for the protection of the surgeon as well as for the safety of the patient.

Nevertheless, after due consideration and

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consultation, there will be cases which not only may be but demand to be deliberately explored, as the best and safest way out of the difficulty. As we learn more about diagnosis, however, and perceive more clearly the necessity for competent consultation, these cases will become fewer, and let us hope in the course of time will finally disappear. In the meantime, as a check upon operative zeal, let us recognize that many more exploratory operations are done by poor surgeons than by good ones.

Admitting, then, as beyond dispute, that deliberately planned exploratory incisions are occasionally necessary, let us consider *incidental exploration*, which means the more or less general and systematic investigation of the contents of the abdomen which should, when practicable, accompany every abdominal section for whatever purpose it may be done.

A moment's consideration should convince one of the wisdom of this proceeding for the following reasons:

(1) Advantage should be taken of the opportunity to demonstrate the soundness of the various abdominal organs, thus adding to the mental ease of the patient and possibly aiding his medical adviser in the future.

(2) In view of the fact that internal diagnosis is often uncertain, it is well for the surgeon to assure himself that he really has located the trouble correctly. Although the operation may disclose an expected lesion, this does not prove that other and even more important troubles do not exist. For instance, an appendix may be found variously altered by chronic inflammation although it is not the real cause of the symptoms complained of, as is so often demonstrated in the course of pelvic and other operations. When such an appendix is removed without further investigation, as is often done, a serious error is committed.

(3) More than one important lesion may

exist in the abdomen at the same time. For instance, pelvic difficulties with appendicitis, gall-stones with duodenal ulcer, disturbances of the stomach or gall-tracts with appendicitis, etc. In fact, I once encountered rupture of both appendix and gall-bladder at the same time in the same patient.

Therefore, having arrived at the conclusion that an exploration, within safe and reasonable limits, should accompany every laparotomy, when possible, two things naturally follow:

(1) The patient should be tactfully, not bluntly, informed of the intentions of the operator, laying stress upon the importance of the procedure and its lack of danger, and consent obtained, in the presence of a witness, to do whatever may seem necessary, provided too much danger is not incurred. It should also be emphasized that the object of a surgical intervention is not simply to do some particular operation, but to cure the patient.

(2) The incision should be so planned as to facilitate the contemplated exploration. The day of the small, inadequate incision has passed, although there are still surgeons who seem to think that their skill should be measured by the smallness of their cuts. This does not, of course, mean that people should be slashed open indiscriminately and to any extent, but it does mean that openings should be made through which the internal organs can be satisfactorily inspected.

To be sure these larger incisions carry with them a certain responsibility, in that they must be so executed that they do not seriously weaken the abdominal wall. The direction of the muscular pull and the lay of the fascial fibers must be considered, as well as the bloodvessels and the all-important nerve supply. Although the subject has not yet thoroughly been threshed out, much attention has been given it and great progress has been made, so that it probably

will not be long before it will definitely be settled as to what is the best form of incision for each particular operation.

In illustration of this subject of incidental exploration let us consider the operation for chronic appendicitis, because it is so frequently done and because it places upon us so many and such varied responsibilities:

The McBurney, or gridiron, incision is undoubtedly to be preferred, especially in the male, because it preserves to the greatest extent the integrity of the muscles, fasciae, bloodvessels and nerves. But as ordinarily employed it often does not afford sufficient room for the proper exploration of gall-bladder, stomach, kidney and pelvis—in other words, the surgeon cannot freely insert his hand within the abdomen. This can and should be remedied, however, by enlarging the incision *towards* the *median line* (Sprengel). The operation is carried out in the usual way, by spreading the fibers of the external oblique longitudinally and those of the internal oblique parallel to the incision in the skin, it is transversely, until the peritoneum is reached. Then, instead of opening this cut transversely, from near the ilium to the border of the rectus. If this is not sufficient, as is often the case, the opening may easily be enlarged to almost any size necessary by dividing the superior sheath of the rectus transversely, in its natural line of cleavage, thus exposing the muscle, which is then retracted towards the umbilicus, by this means permitting division of the inferior layer of the sheath together with the peritoneum. The whole hand can now be inserted if desired, the size of the opening being all that is required for almost any manipulation. I have used this modified McBurney incision almost exclusively in the male for more than a year and have found that it afforded ample room in all sorts of cases.

In the female, when the presence of a

pelvic lesion is suspected, it is perhaps better to use a low incision through the right rectus, near the median line, in order to disturb the nerve supply as little as possible, or else a modification of the Pfannenstiel cross-incision, which seems to have much to recommend it in such cases. It is possible, however, when the operation is of the McBurney type and the necessity for pelvic work unexpectedly arises, to extend the original skin incision downwards and inwards so as to permit of an additional low splitting of the rectus. With this possibility in view it is perhaps well to locate most gridiron operations somewhat lower in adult women than in men, which is all the more appropriate owing to the frequent mobility of the caecum in the female and its common situation in the pelvis.

With the completion of the incision the responsibilities of the surgeon really begin. He must keep his wits about him and follow a regular system if he is to cover the ground thoroughly and overlook nothing. He must examine by touch—the gall bladder, noting its size, its thickness, its compressibility and the presence or absence of stones; the gall ducts; the pylorus, testing its permeability if possible and feeling for enlargements and indurations; the duodenum; the stomach; the pancreas; the liver; the kidney; the pelvic organs; and everywhere incidentally bear in mind the possible presence of tumors and enlarged glands.

Then come other considerations, such as ptosis of the stomach, liver, colon and caecum, to which so much attention has recently been directed. And even this does not end the list, which must also include Lane's Kink, Jackson's membrane, Meckel's diverticulum, bands and adhesions of various kinds, torsion of the omentum, and small umbilical inguinal and femoral herniae as well as those of the superior linia alba. And, in addition, watch must



constantly be kept for unusual things not included in the regular category.

In operations in the upper abdomen and in the pelvis the exactions, if not so numerous, are nevertheless great. For instance, no work should be done upon the gall bladder or stomach without examining, as far as possible, the appendix, kidney and pelvis; and in pelvic operations the reverse should be the rule. If gall stones are found from the pelvis as they frequently are, it is often comparatively easy to remove them through a small buttonhole opening with the aid of a hand inserted through the lower incision. No one knows better than the busy surgeon how often the appendix is diseased when the symptoms are all apparently referable to the gall-bladder or to the stomach.

In operating for movable kidney the peritoneum should be opened sufficiently to explore the gallbladder, the pancreas, the pylorus and the pelvis, if desirable. It is not so easy, however to appreciate lesions of the appendix by touch through such an opening, but where the cecum is quite movable, as it often is, especially in women, it may frequently be brought into view by a little manipulation and the appendix seen and removed if necessary—a very desirable thing to do, owing to the common occurrence of chronic appendicitis with nephroptosis.

To recapitulate: Everyone recognizes the necessity for occasional deliberate exploratory laparotomy in the present state of our diagnostic ability; but it is not so generally appreciated that an incidental exploration should, when practicable, accompany every abdominal section, for whatever purpose it may be done, and that our incisions should be planned with this object in view.

## ABDOMINAL ADHESIONS AND KINKS\*

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During the last two years, a good deal has been written upon the above subject, which has thrown light on our failures to obtain complete relief in all cases of interval operation for appendicitis, or in chronic recurrent cases where the reflex symptoms were the most marked. Every surgeon who has done many appendectomies, can recall cases where the pathology apparent in the appendix failed to account for the clinical symptoms. Probably most of these cases can be accounted for by an unrecognized kink in the ileum, caused by a membranous pericolicitis, or a congenital condition. As to whether the Lane kinks or the Jackson membrane or veil, is a congenital condition, or caused by inflammatory process, is a subject of much discussion. The etiology of this condition can best be described by quoting from the best authorities, who have made a study of the condition:

### ETIOLOGY.

That the ileal kink is caused by descent of the cecum is generally admitted. F. H. Martin reminds us that the lower ileum is comparatively fixed and that there are two factors leading to its distortion, a too movable or misplaced large bowel, or an abnormal disposition of the remaining small bowel or other viscera, concluding that it is safe to assume that the kink will not occur if large and small bowel are normal. Martin well points out the importance of the long-continued traumatism of the comparatively fixed portion of the ileum by the overriding of the intestine and superimposed viscera. The descent of the cecum he explains as due to developmental

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failure of fusion between parietal and visceral peritoneum, resulting in general visceral enteroptosis, improper muscular development of the abdominal wall, persistence of a straight spine, and non-rotation of the pelvis to a position of right angle to the perpendicular of the spine.

Mr. Lane considers the ileal kink to be due to ptosis of the cecum, which in turn he attributes largely to the erect position of the trunk. He explains that this tendency of the cecum to fall is met by crystallization of lines of strain into peritoneal adhesions, which form bands external to the cecum and ascending colon, and fix these structures to the abdominal wall, frequently involving and distorting the appendix. The internal strain comes upon the termination of the ileum, and the posterior layer of its mesentery. In the latter region, a layer of peritoneum is formed, that kinks the ileum in two planes, one being vertical and angular, the other being due to torsion, the combined rotation and angulation making a very effectual obstruction. The end of the ileum, with the additional thickening and contraction of the posterior layer of the mesentery, form an *internal*, or median, ligament, which tends to keep the cecum out of the pelvis. The *external*, or lateral, ligament, consists of the acquired plane of peritoneum which extends inward from the abdominal wall to the cecum, and ascending colon, with also the proximal portion of the appendix in some cases. The external acquired ligament of Lane is in many respects very similar to the membranous pericolicitis of Jackson.

An essential cause of the membranous pericolicitis is not generally accepted. Jackson frankly admits ignorance as to whether the ptosis antedates and is followed by this condition, or whether the ptosis is a result. Mayo believes this membrane to be "due to the late rotation of the bowel and descent of the cecum from its hepatic posi-

tion, after the formation of the parietal portion of the peritoneal cavity in the infant. The cecum burrows its way into position, as it were, through the peritoneum.

Such an explanation attributes to the cecum in its descent from the liver, the rather unusual choice of the route of the greatest, instead of the least, resistance, and prompts the question: Why burrow behind an already formed posterior peritoneum, when it would be much easier to descend in front of this structure in the usual manner?

"After the removal of this adventitious membrane, the cecum and the colon usually have a mesentery, and can be brought well up into the abdominal wound. Were the explanation of Mayo correct, the caput cecum and the appendix would be enveloped by the veil, as this would be the entering wedge to force itself behind the peritoneum. But, as a matter of fact, the appendix and the lower part of the cecum are often not within the membrane, its lower margin being above the lowest point of the cecum.

Binnie considers it a primary pericolicitis, the appendix, if involved, being secondary, and quotes Alglave, who attributes the entire change to nephroptosis.

Morris, in speaking of "gall spider cases," quotes the late Byron Robinson to the effect that adhesions were found in the bile tract region more frequently than elsewhere in the peritoneal cavity, excepting the pelvis in women; and that the cecal region stood third in order of abundance of adhesions.

Hertzler has described a similar condition, but considers it to be of inflammatory origin, either in the appendix, or gall-bladder.

Hofmeister likewise considers the cause to be an inflammation of neighboring organs, such as the bile passages, stomach, or duodenum. He makes the report that in ten of his last fourteen cases, the *tricho-*

*cephalus dispar* was found. This observation is most interesting because of the fact that Metchnikoff and Guirat both have suggested that the escape of intestinal bacteria along the fine passages made by this parasite, is a probable cause of some cases of peritonitis and appendicitis.

Lennander believes that adhesions are chiefly the result of infantile colitis.

Chronic colitis is looked upon as a cause by many, and Fischler states that such an inflammation of the colon leads to muscular atony.

That the conditions under discussion are *not* inflammatory, would seem to be indicated by their very definite localization. If due to appendicitis, the appendix would be constantly involved; if due to colitis, the median aspect of the colon should be equally involved.

Lane, Jackson and Martin all agree that these changes are not adhesions in the usual acceptance of the term. Lane goes so far as to say: "Nothing appears so absurd as the attempts of surgeons to make out that the inflammation of the appendix is a primary condition, and that it is productive of the other effects of intestinal stasis.

The attention of the profession has not been called to this condition until quite recently. It is therefore rather difficult to say how often these conditions exist. However, it would appear that they are more frequent than we have before believed.

Since my attention has been directed to this condition, I have found the Jackson veil in four cases of chronic recurrent appendicitis operated. In these cases the appendices showed marked pathology, and were removed, the veil of adhesions also being destroyed. No recurrence of symptoms in these cases has occurred to date, although it is yet too soon to say that there will never be any.

The symptoms of kinks, or adhesions, are those that we have always attributed to

chronic recurrent appendicitis, more or less aggravated in individual cases. The treatment should be removal of the appendix, plus destruction of any and all bands of adhesion. This can only be accomplished by a liberal incision and a thorough inspection of the cecum and last five or six inches of the ileum.

We are constantly meeting with adhesions and kinks, which cause obstruction of the bowel, which are due to acute or chronic inflammatory processes in the pelvic organs. Some of the most serious obstruction cases I have met with, were from this cause. The treatment of these cases is removal of the obstructive bands and adhesions, and the offending inflamed organ.

#### DISCUSSION OPENED.

**Dr. R. W. Corwin, Pueblo:** I have but little to say in regard to this. In the first paper, with regard to adhesions, the difficulty arises, how can you prevent them from reforming. That has been discussed.

With regard to diverticulitis, I should like to mention a case that I had, and of which I shall describe in a very few words.

A man had been operated on for appendicitis. Some six or eight months later he first came to my notice. He was suffering with severe pain in the right side. When he arrived in Pueblo he was in a condition demanding immediate operation. The operation revealed adhesions of the colon. These were liberated and immediately his pulse and respirations, which had been irregular, became normal, and a marked cyanosis relieved. On further exploration it was found that about four inches from the ileocecal region a diverticulum about an inch and a half in length protruded almost like an appendix. An effort had been made before the patient was brought to Pueblo to move the bowels. Among other things that had been given was a dram of metallic mercury. Results were not satisfactory and it failed to pass the bowels. When I saw this diverticulum I fancied that possibly it had some connection with the mercury. I could feel nothing in the sac. The protrusion was invaginated and stitches taken to prevent its return. On account of the patient's serious condition the operation was brought to a close as rapidly as possible. The patient made a good recovery.

Fourteen days later the patient was standing at a window as one of the staff at the hospital happened to enter his room, when the man turned about and exclaimed: "I feel as though something had come from my bowels," and sure enough, nearly a teaspoonful of metallic mercury was found upon the floor, which



had slipped down his pajama. This is rather a remarkable case; it has been reported, however.

With regard to the necessity of exploratory laparotomy, we need but refer to what Dr. Crile said yesterday. Many serious cases do we meet, yet there is absence of pain—laparotomy alone revealing the true condition.

**Dr. Horace G. Wetherill, Denver:** The point made by Dr. Freeman referring to general exploration of the abdominal cavity when it is opened, is not only a very important one, but one the importance of which we have fully appreciated only comparatively recently. In operating upon a woman for intra-abdominal conditions, including appendicitis, it has been my habit for several years to make a median incision. In most women, particularly those who have borne children and who have relaxed abdominal muscles, easy access is thus given to the whole of the abdominal cavity. My objection to the incision through the right rectus, which Dr. Freeman advocates is this: While it does make it possible to close the abdominal wall, so that there may be less liability to hernia, it goes through the belly of the muscle, and my observation with muscle incisions of this character is that they are very liable to infection.

In the second place, it invades the peritoneal cavity through a very vascular area. It is almost impossible to make the rectus incision without dividing some of the branches of the deep epigastric artery, and hemorrhage within the muscle or just underneath it is sometimes very difficult to control. So for very good reasons I have preferred to make the median incision between the sheathes of the muscles and make the incision long enough to introduce the whole hand, making complete abdominal exploration in this way. I remember in one instance being saved a disagreeable humiliation with a patient in whom I found the appendix on the left side. The patient had a very movable cecum, and the base of the appendix was found lying immediately under the incision in the median line the body of the appendix upon the left side and its tip well down in the left pelvis. I never have had any difficulty in reaching the appendix in women through the median incision. Even when the appendix has been retrocecal or high up, it has been possible to bring it into the median line.

**Dr. W. W. Grant, Denver:** With regard to Dr. Corwin's suggestion that the difficulty is to cover the abraded surface and break up adhesions, I will simply suggest that it is common to use for that purpose the omentum, and when this is not convenient or accessible, even a portion of the peritoneum taken from the wall can be used on certain parts, and then the abdominal surface brought together.

In reference to Dr. Freeman's suggestion of incidental exploration, which is now becoming quite common, I wish to say there are exceptions to that right. It should not be universal; I do not know that it should absolutely be general. In the absence of any indication whatever of disease of any kind than the one

upon which you operate, there are certain limitations to this universal exploration of the abdominal cavity.

Let me mention a case I had four days ago with perforation of the appendix. Would you in such a case as this think it advisable to explore the upper abdominal cavity? I would not. I would not run the risk of creating an infection from any organ to another, in the absence of some positive indication of disease of other organs of the viscera. Therefore, there should be some limitation to an absolute general rule to this kind of work. The surgeon must use his discrimination, and I assume Dr. Freeman himself would readily admit that—that rule, like many others, can easily be abused, and in no more forcible way can it have any more distressing effect than in the tendency to spread infection from one diseased organ to another, simply to find out whether there is something else that needs attention.

**Dr. A. R. Pollock:** I think all surgeons, wittingly or unwittingly, sometimes do an exploratory abdominal operation.

The important thing is to establish a surgical diagnosis. In establishing the diagnosis all the laboratory and other refinements in diagnosis should be made use of, provided these measures do not cause delay in urgent cases.

If one has a case in which he is satisfied operation is indicated he should perform that operation if he does not know exactly the condition present. In other words, while an accurate diagnosis should be made in every case possible before operation, there are some cases where the absolute diagnosis is not possible, but a surgical diagnosis can be made and here operation is indicated and should be done.

As to the statement of Dr. Freeman that a large incision and thorough exploration should be made in every case where the abdomen is opened, of course I do not believe that he meant just that. For instance, in a case of acute appendicitis with rupture and pus free in the peritoneal cavity, the large incision and any general exploration would be decidedly contra-indicated. On the other hand, in chronic appendicitis or other clean abdominal operations, the long incision and thorough exploration is the proper procedure.

**Dr. David P. Mayhew:** I would like to say something, not concerning my paper, but concerning Dr. Finney's. Dr. Jackson of Kansas City first described this membrane, if I remember rightly, in the winter of 1908, and has since that time developed a clinical picture which enables us in a majority of cases to make a definite diagnosis beforehand in these cases of Jackson's membrane. He told me about that only last December, and since then I have been enabled to make a diagnosis in several cases. These cases are very much more frequent than we have thought in the past, and I believe that they are the cause of a good many obscure symptoms which we have been unable to diagnose heretofore, or to relieve by the simple operation for chronic

appendicitis. The symptomatology is very similar to that of chronic appendicitis or acute appendicitis, with the exception that the tenderness is not localized to Mr. Birney's point, but extends upward along the course of the right rectus muscle; there may be nausea and vomiting present; there is usually no increase of the pulse rate, or but a slight increase; there is no fever at any time; there is constipation constantly present, the constipation being the most marked feature in these cases. The pain may equal or not that of an acute appendicitis, but more commonly is very much less acute than that, resembling the pain of a chronic appendicitis. With this clinical picture in mind we can frequently make the diagnosis, and upon opening the belly be much gratified to find the membrane which Jackson has so very well described.

### TUMORS OF BONE.\*

SAMUEL BERESFORD CHILDS, M. D.  
DENVER, COLO.

The possibility of a reliable diagnosis in tumors of bone has been greatly enhanced since the advent of the x-ray and more extensive experience coupled with maturer judgment has made the Roentgenologist's opinion of great value in detecting the early stage as well as the progressive changes peculiar to the various forms of bone tumors.

It is not difficult at the present day to strip the bones, so to speak, of their covering of flesh and muscle, thereby making them stand forth for critical inspection upon the Roentgenogram, disclosing a normal medulla and a normally striated cortex circumscribed by a clear-cut periosteal edge, or to show any pathological departure from this typical picture.

The subject of bone tumors is so extensive, and the time so limited that I shall confine myself largely to those tumors and pathological changes in the bones which are met with most frequently and yet, in which the true nature of the process is often not detected by the ordinary means of clinical

diagnosis in the hands of the average practitioner.

The bony system, like the soft structures of the body, is subject to a wide variety of diseases and new growths, both benign and malignant, yet a careful study of the x-ray plate reveals certain peculiar characteristics in each case which, when combined with the clinical findings, differentiates the existing condition with reasonable accuracy. The first condition to which I call your attention is exostoses. These pathological excrecences or growths from the bone are found in various parts of the body and in the long bones are usually situated near the extremity of the diaphysis. Occasionally they give rise to few, if any, symptoms, oftener, however, especially from interference with tendon or joint motion, or from pressure symptoms they occasion much pain and discomfort.

A frequent site of these growths is from the os calcis and here they are described as spurs. They are found on the inferior surface of this bone near the point of attachment of the plantar fascia, also on the posterior surface near the attachment of the tendo Achillis as well as upon the lateral aspects of the bone. Their etiology in this locality is not definitely known but trauma, strains, prolonged standing or walking, ill-fitting shoes and infections, particularly gonorrhœa, are probable provocative causes. The symptoms are pain or soreness in the heel, discomfort and disability in walking, frequently associated with a valgus. These cases are frequently treated for rheumatism or sprains. An x-ray examination readily reveals the nature of the process and discloses a true bony growth broader at its base and tapering to a sharp pointed apex. In the early stages of their development these spurs are limited by a hazy edge but later on the spur becomes well organized bone throughout with definite edges which are at times serrated. These spurs are comparatively

\* Read at the annual meeting of the Colorado State Medical Society, September 25, 26, 27, 1912.

common and often exist for a long time before the correct diagnosis is made.

Exostoses of the spine are to be differentiated from osteo-arthritis and the characteristic points of difference will be mentioned under the latter subject. I recall a case of an exostosis in the shape of a horn springing from the body of the third lumbar vertebra in a man aged fifty-five. He had been treated for rheumatism for years and was incapacitated for work from the fact that when he assumed certain positions such as straightening the spine after bending forward or bending laterally he was seized with a severe pain or cramp which was of such severity as to render him helpless for a time. The diagnosis was readily made by the x-ray.

2. Osteo-Arthritis. I know of no benign disease of the bones in which an early diagnosis is of more importance to the comfort of the patient than in osteo-arthritis. The disease comes on insidiously, is progressive in its nature and disastrously crippling in its results when long-continued. The symptoms are "rheumatic" in nature and the majority of cases have been subjected to prolonged treatment for rheumatism before they have consulted some physician, who, suspecting the true nature of the disease, has referred them for an x-ray examination. The diagnosis by the x-ray is easy, for the osteophytes are readily seen projecting from some portion of the joint surface provided we are dealing with the hypertrophic variety, while in the atrophic form frequently seen in the distorted fingers and hands in old people, the destruction of bone is at once apparent. Again in the destructive form of osteo-arthritis found in tabes, the partially dislocated and distorted appearance of the joint surfaces establishes the diagnosis. In the differential diagnosis between osteophytes and exostoses, the osteophytes are generally several in number, irregular in outline, and are often found in different joints, spring-

ing from the joint surfaces, which are thickened, irregular and distinctly roughened, whereas in exostoses, the growths are true bone, generally single in any one locality, spring from a broad, well-defined base and are not in relation to the joint surface. Upon several occasions I have called the attention of this society to the importance of an early x-ray examination in all cases of sub-acute or chronic joint affections and have cited instances in which pathological dislocations from the disease have led to malpractice suits, for alleged improper treatment and failure in diagnosis, in cases in which the inception of the disease was undoubtedly traumatic.

3. Ostitis and Periostitis. In periostitis, if traumatic, we can trace by the x-ray the periosteal line raised from the bone and occasionally separated from it by an opaque shadow indicative of the presence of a blood clot, also in scurvy the subperiosteal hemorrhages can be readily demonstrated. In non-traumatic periostitis, the thickened periosteum appears upon the plate as a definite line of varying thickness raised from the cortex of the bone.

In ostitis the x-ray plate shows very clearly the thickened cortex with the normal striæ largely obliterated due to the deposit of bone cells in the interstices causing the condition of eburnation so frequently found at operation. As syphilis generally affects the cortex of the bone and its periosteum producing marked nodosities, the diagnosis is rendered positive by the presence of these conditions upon the x-ray plate.

4. Bone Abscess, non-tuberculous. One or more translucent areas in the region of the medullary cavity associated with an ostitis and a well-marked, thickened, irregularly dense deposit in and about the periosteum form the typical picture upon the x-ray plate of osteo-myelitis with abscess cavity or cavities. The presence of the proliferating ostitis and periostitis differenti-



ates this condition from malignant disease. I could cite many cases to demonstrate the value of the x-ray in the diagnosis of this condition as well as its value in determining the location, extent and number of the abscess cavities. Tuberculous abscess of bone is characterized by areas of increased translucency in the bone without any demonstrable proliferating osteitis and periostitis, markedly differing in this respect from non-tuberculous abscesses. In tuberculosis of the bones or joints before abscess formation the area is characterized upon the roentgenogram by a peculiar haziness or cloudiness associated with a rarefying osteitis and atrophy of the affected bone; at a later stage these characteristics are still present and the affected areas of disease have a peculiar, irregular, moth-eaten appearance, due to the loss of bone substance. Not until the reparative process becomes established do we have upon the x-ray plate the appearance of a constructive osteitis. Although we all recognize the importance of an early detection of a tuberculous process in a joint, yet we see frequently cases of this disease which have been treated for a length of time for some supposedly transitory inflammation, generally attributed to rheumatism.

5. Bone Cysts. Within the past two years, due to the work of Bloodgood, Silver and others, this subject has been presented to the profession in an exhaustive manner. The x-ray findings in bone cyst are constant but resemble to a marked degree the shadows cast by a sarcoma, and in this particular instance the combination of clinical findings and x-ray evidence are very important, yet in many cases the true nature of the process, whether benign or malignant, can only be determined upon the operating table.

The typical x-ray picture of a benign bone cyst shows a more or less uniform expansion of bone, the normal striæ being replaced by a fairly homogeneous translucency,

interspersed with streaks indicating the partitions in the cyst wall, the whole area being surrounded generally by an intact, though thinned, cortex.

6. Sarcoma. The x-ray plate in this condition reveals many of the same characteristics as are found in bone cysts but the main points of difference are, that instead of a uniform expansion of bone as in benign bone cyst the expansion in sarcoma is more irregular, the growth generally taking place from one side of the bone, the whole area is more mottled and less translucent, the edge of the cortex is not as regular and the growth pushes through the cortex at an earlier period.

In bone cysts and sarcoma one of the earliest signs may be a spontaneous fracture and an examination will reveal the condition of the bone above presented. This kind of fracture also takes place often in rarefying osteitis and osteo malacia, but the clinical, as well as the x-ray picture in these latter conditions are very different. Extreme care should be taken in the x-ray examination of these fractures, for upon the correct interpretation of the plate may depend the patient's life.

In this connection I cannot emphasize the importance of an early x-ray examination, in cases of bone disease better than in citing the following case:

A young girl nine years old was sent to Colorado with the diagnosis of tuberculosis of the metatarsus of the right foot. Patient was referred for an x-ray examination by Dr. Powers. The entire shaft of the second metatarsal bone was shown to be diseased with an enlargement of the bone and areas of softening. From the appearance of the plate tuberculosis of the bone was excluded and a diagnosis made of an osteitis with areas of softening and the probability of malignancy was suggested. Infiltration of the soft tissues in the region of the affected bone was present. The metatarsal bone was removed and a diagnosis

by the microscope was rendered of small celled sarcoma. Amputation at the lower third of the leg was performed shortly after the pathologist's report was received.

Unlike sarcoma of bone, which is generally primary, carcinoma of bone is always secondary and is usually detected only after the bone has fractured from loss of lime salts and the softening that has taken place. The x-ray reveals an area of osteoporosity with more or less destruction of bone substance. Hawley states that carcinoma of bone has received little attention in literature because it exists without marked troublesome changes and because the x-ray is too infrequently used.

The ordinary signs of bone tumor are:

(1) Pain and discomfort in the bone with more or less spasm and limitation of motion according to the location of the growth.

(2) Fracture from slight traumatism.

(3) The presence of a growth.

Conclusions:

(1) When the typical symptoms of bone tumor are present, a diagnosis is readily made, but the bone changes should be accurately determined by an x-ray examination.

(2) Any case of suspected bone disease should have an early x-ray examination by a competent Roentgenologist.

(3) Before an operation is undertaken upon diseased bone an x-ray examination should locate the nature and extent of the affected area.

342 Metropolitan Bldg.

#### DISCUSSION.

**Dr. Leonard Freeman, Denver:** I wish to call attention to what Dr. Childs said regarding the early diagnosis of sarcoma of the bones, and to emphasize its importance.

In illustration: A young woman, in the latter part of November, fell on her elbow. It was not considered a very serious injury. Two or three weeks afterwards she began to have pain in the upper portion of the ulna. An X-ray picture was taken, not by a physician, but by a layman who takes X-ray pictures. He examined it carefully and gave it as his opinion that prob-

ably the bone had been cracked, and the plate was put to one side. In January, some two and a half or three months after the original injury, the elbow began to swell in the region of the lower arm. Dr. Stover then took another X-ray picture—he did not take the first one—and found a well-developed sarcoma, with the bone expanded, a mere shell remaining. The only thing to do was the amputation of the arm, which was done later on. Then Dr. Stover succeeded in getting hold of the original X-ray plate, and we found that it showed distinctly a central osteo-sarcoma, which, if it had been diagnosed at the time of the original plate, might have resulted in the removal of a part of the upper portion of the ulna only, with a saving of the arm to the patient. Emphasis has been very strongly laid upon the point that when we discover these sarcomas early enough in the bones we can remove that section of the bone only, without the amputation of the arm or leg, but still save the life of the individual. To draw this picture of central sarcoma very roughly, it showed something like the diagram which I put upon the board, without any expansion of the bone at all, simply a well-defined, rarefied spot in the center of the upper portion of the ulna. Dr. Stover was to bring this picture down here for your edification, but I have not the slightest doubt in the world that he has forgotten to bring it!

**Dr. Stover:** Dr. Freeman said not to.

**Dr. Freeman:** I want to say something else in relation to this, that this is probably an unique picture. Dr. Bloodgood informed me at the last meeting of the American Surgical Association, and also spoke of the subject in his address on bone tumors, that there had not been a single X-ray picture published within his knowledge—and he has as large a knowledge on the subject as anyone else—which showed a sarcoma in its beginning stages. So that this picture is probably of considerable interest, and I wish we had it.

#### GLAUCOMA.\*

#### *Its Diagnosis and Present Methods of Treatment.*

WILLIAM H. CRISP, M. D.

DENVER, COLO.

Of all the instruments of precision used in the work of refraction, one of the most scientifically exact is the ophthalmometer. By its aid, when dealing with a regular cornea, we are able to arrive at very definite information as to the corneal curvature. The first inventor of an ophthalmometer was Helmholtz, the man who gave us the first form of the ophthalmoscope. But the

\*Read before the Weld County Medical Society, March 3, 1913.

first ophthalmometer which was practicable and simple enough for general clinical use was designed by Javal and his pupil Schiötz. Javal was then a Parisian oculist of mature experience and renown, and professor at the Sorbonne. He interests us at this time because, at the age of sixty-one years, he became entirely blind from glaucoma. Dr. Carroll E. Edson of Denver is responsible for an excellent translation into English of a thoughtful little work entitled "On Becoming Blind" ("Entre Aveugles"), written by Javal after his sight was lost.

With the fate of Javal, whose death occurred after seven years of total blindness, we may contrast the history of Laqueur, another oculist who was attacked by glaucoma, but who, as the result of successful operation, lived for twenty-nine years in the happy possession of excellent visual acuity.

The different records of these two men illustrate the uncertainties of the disease of whose gloomy prognosis Siehel wrote in 1842: "There has been no proven ease of cure of glaucoma. Observations as to the cure of glaucoma or its improvement by operation must be based on errors of diagnosis or on confusion in terminology." In Desmarres' *Treatise on the Eyes*, edition of 1848, we find the statement that "Glaucoma always leads sooner or later to complete and incurable loss of vision in the eye attacked, and most frequently it attacks both eyes at greater or less intervals."

We cannot today be confident in every case of saving eyes which are threatened with blindness from glaucoma. But the indispensable condition for the salvation of the patient, in this even more than in many other diseases, is an early diagnosis, leading to the prompt institution of appropriate treatment. In some cases, even a temporary error may be fatal, and this is particularly true if the mistake leads to the use of treatment suited to other ocular dis-

cases but deadly to a glaucomatous eye.

The causation of glaucoma remains in part one of the unsolved mysteries of medical science. So far as our present knowledge extends, the essential factor is a disturbance in the normal relation between the intraocular tension and the resisting power of the tissues to that tension. Disregarding the many disputes with reference to the source of the intraocular fluids, the common view is that they are supplied by secretion or transudation from the epithelium of the ciliary body, just back of the iris, and possibly also from the iris itself. There are probably other modes of entry of fluid to the interior of the eye, but they are unimportant. Excretion is believed to be carried on principally through a series of delicate structures at the angle of the anterior chamber, the pectinate ligament, the canal of Schlemm (a modified vein), and some veins in the sclera with which the canal of Schlemm is in relation. The maintenance of normal intraocular tension, usually regarded as equivalent to about 25 mm. of mercury, depends on the existence of a proper relation between secretion and excretion.

We may say, therefore, very simply as regards secondary glaucoma, that a pathologic rise of tension may be caused by any condition which wholly or in part shuts off the channels of escape of the intraocular fluids from the eye. Among such causes the action of adhesions of the iris to the cornea, of extensive adhesions of the iris to the lens, of contact between the lens and cornea, and of dislocation of the lens into the anterior chamber, is easily understood. Secondary glaucoma may arise after operations on the eye, and especially after cataract extraction, from adhesion of iris, lens capsule, or vitreous to the wound. Injuries to the lens, either accidental or operative, may cause glaucoma either by rapid swelling of the lens, which applies the iris to the cornea, or by blocking of



the angle of the anterior chamber with fragments of the lens substance. It is important to remember, in cases where the growth cannot be seen with the ophthalmoscope, that a tumor inside the eye may be the cause of glaucoma. In fact, an eye which contains a tumor is usually sooner or later glaucomatous. The reason for this is not always clear, although in many instances it is no doubt due to pressing forward of displaced vitreous humor.

In using the term secondary glaucoma we are of course confessing our ignorance of the cause of those cases which we class as primary or idiopathic, whether acute or chronic, simple or inflammatory. It was this treacherous and puzzling primary form from which suffered both Javal and Laqueur. Its mechanics are obscure. Conditions found in the enucleated eye, and described by one group of authors as the anatomic cause of the disease, are by another set regarded as its consequence.

Both Javal and Laqueur, writing with the critical minds of trained medical observers, have described their own cases. Both writers were Jews, and Laqueur remarks, "It is no accident that of three oculists who have suffered from glaucoma, two belong to the Jewish race." Javal's prodromal attack in the right eye occurred twenty years before he became totally blind, and seemed to follow very hard use of this eye during his prolonged studies of ophthalmometry. Laqueur's first warning came on a hot summer day when he had exhausted himself over a tedious lid operation and had waited two hours longer than usual for his dinner. He noticed a blurring before first one and then the other eye, and the light of a lamp which he lit for the purpose was surrounded by the characteristic colored halo. Javal's early symptoms include clouding of vision, the halo around lights, moderate dilatation of the pupil, and slight increase of intraocular tension.

As Laqueur's attacks became more frequent, he learned more and more "the great importance of psychic influences" in his malady. "An access of vexation, of anger, of embarrassment (*Beschämung*), even the pleasurable excitement of stirring music or a fine scene at the theatre called forth the attack. Among bodily influences were excessive hunger, staying in bad air, in a hot room during social gatherings; while outdoor exercise cut short the attack."

Javal's case has some interesting contacts with recent French history. He refers repeatedly to acute attacks brought on by strong emotion. For some years he sat as a member of the French Chamber of Deputies. The electoral campaign which preceded this chapter in his history cost him dearly for it was followed by the attack which first seriously diminished the vision of his right eye. This was in 1885. The left eye was first affected in this same year, but in spite of repeated attacks retained normal vision until 1899.

Most of us have some recollection of the stormy scenes produced in France by the celebrated Dreyfus case. You will remember that Dreyfus, a Jewish officer of the French army, had been exiled on a lonely convict island for an offense of treason which he had almost certainly never committed, but which had been testified against him on the basis of a forged document. It is by no means improbable that hatred of his race was at the bottom of the whole conspiracy. After Zola had been sent to prison and heavily fined for a brilliant and fearless exposure of the whole affair, the friends of Dreyfus were successful in 1899 in obtaining a new trial. On September 9th the military court again found Dreyfus guilty, thus whitewashing the previous conviction, but, every shred of substantial evidence in support of such a verdict having been annihilated by the defense, the court recognized the truth to the

extent of making a recommendation which caused Dreyfus to be granted a disgraceful pardon. On the very day of this extraordinary judgment, Javal, who had attended the court and ardently watched the proceedings, had a serious attack in the left eye.

For fourteen years this left eye had been subject to glaucomatous attacks. In 1886 halos were seen every week or two, especially, says the patient, "after the least indulgence in wine." But although in the last year or so the attacks had become even more frequent and pronounced, the halos being accompanied by cloudy vision and dilatation of the pupil, yet pilocarpin and eserine, latterly combined with morphine injections, had always cut short the disturbance, leaving the visual acuity perfectly normal. But, after the violent emotion provoked by the Dreyfus judgment, normal vision was never recovered; and, whereas after each previous attack the pupil had always returned to a diameter of less than 2.5 mm., after this epochal attack the pupil remained usually between 3.5 and 4 mm., in spite of the regular use of pilocarpin. Vision grew steadily worse, and the visual field became contracted, especially for small and poorly lighted objects. The optic disc had become pale and cupped, especially on the temporal side. Redness of the eye is mentioned as accompanying the later attacks, but with neither eye does pain appear to have been a conspicuous symptom until after operative measures had been employed. Increase of ocular tension occurred in each eye.

The symptoms revealed by these two patients, according to their own description, are therefore: colored rings around lights, cloudiness of vision, dilatation of the pupil, hardening of the eyeball, redness, dependent mainly on enlargement of the episcleral vessels, pain, loss of transparency of the cornea, cupping and pallor of the optic disc and limitation of the visual field.

As late as the early part of the nineteenth century glaucoma was regarded as a form of cataract. As the ophthalmoscope was then unknown, this is not surprising. The conspicuous fact in both conditions was that the patient gradually lost his sight. This conception of the disease was favored by the peculiar greenish reflex often seen in the pupil in glaucoma, and from which the disease originally took its name. The mistake of regarding the loss of vision in a case of glaucoma as due to cataract is unfortunately still quite common, especially among those who do not employ the ophthalmoscope. Only a week or so back I saw a patient whose right eye had gone blind while her oculist was waiting for a cataract to ripen. The lens was practically free from opacity, but the sight of the eye was entirely gone. Prompt recognition of the real condition might have saved very useful vision in this eye.

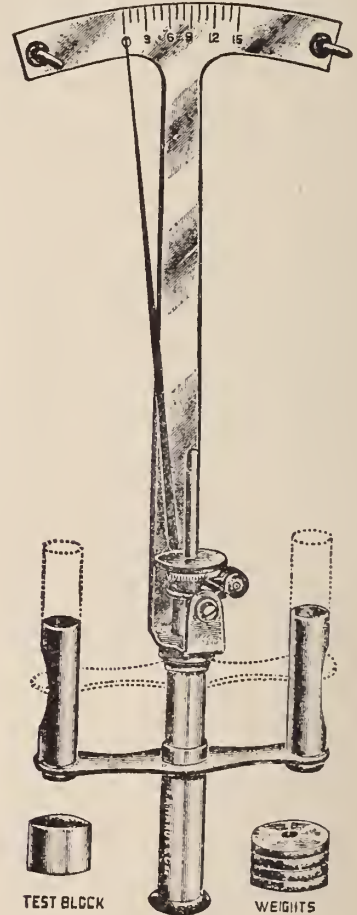
It is in the white, painless eye of simple glaucoma that the diagnosis of cataract is most likely to be made. An inflamed and painful case of glaucoma not infrequently gives rise to another error against which every general practitioner should be on his guard. To diagnose a case of glaucoma as iritis usually means that the patient will become blind more rapidly than if he had never consulted a physician. This of course depends on the fact that in the treatment of iritis we almost invariably employ atropine. In iritis atropine does good by avoiding or breaking up adhesions between the iris and the anterior capsule of the lens, and by putting the ciliary muscle and the sphincter muscle of the iris completely at rest. But in glaucoma the dilatation of the pupil caused by atropine draws the thickened iris toward the angle of the anterior chamber, and so tends to block the excretory channels of the eye and to still further increase the already abnormally high tension. This mistake is altogether too frequent, and has caused the premature loss

of many an eye. It could almost always be avoided by remembering that in iritis the pupil is contracted, even in a poor light, whereas in inflammatory glaucoma the pupil is most likely to be dilated. Moreover, to anyone who has ever practised taking the tension of an eyeball with his fingers, and who will compare his own eye with that of the patient, there will seldom be any difficulty in detecting the abnormal hardness of an eye affected with inflammatory glaucoma.

I remember at least one instance in which the patient did not discover the loss of vision until recovery from what she supposed to have been an acute illness in no way connected with the eye. There were nausea and vomiting, and a terrible neuralgia extending over the face and scalp. Neither physician nor patient had recognized that all these symptoms were dependent on a severely acute attack of inflammatory glaucoma. In any such case the eye should be carefully inspected, and tests made of the vision and intraocular tension.

To take the tension with the fingers, the patient should be instructed to look down towards his feet. The surgeon then rests the middle and ring fingers of each hand on the patient's forehead, and with the index fingers makes gentle alternating pressure on the upper part of the eyeball, somewhat after the fashion of testing for fluctuation over an abscess. The patient's two eyes should be compared with one another, and may also be compared with those of the examiner. This rough and ready method is useful, but necessarily inexact. Many attempts have been made to design an instrument which could be used in general clinical work for a more precise estimation of the intraocular tension. Most of them were unsatisfactory, but within the last few years a very good model has been worked out by the same Schiötz, now in Christiania, Norway, who thirty years ago assisted Javal in perfecting the ophthalmometer.

The instrument which I have here is a modification of Schiötz's instrument by Henry Gradle of Chicago. It differs in no essential from the original pattern.



As the instrument is applied directly to the patient's cornea, a local anaesthetic is necessary, and for this purpose holocaine in two per cent. solution is preferred, as having less effect on the pupil and tension than cocaine. The patient is placed in a recumbent position and told to look at a point on the ceiling directly overhead. The essential principle of the apparatus is to record on a scale the resistance offered by the cornea to indentation by a metal rod, which moves freely up and down through a metal sleeve. The figure shown on the



scale of the instrument is interpreted in millimeters of mercury by comparison with a printed paper chart. The normal tension of the average eye appears to be about 25 mm. The limits of normal tension are probably about 15 and 28 mm.

The use of the tonometer greatly refines our diagnosis of glaucoma, and should improve our chances of successfully coping with the disease. Where one eye only has been definitely attacked, the tonometer should enable us to watch more closely for early indications of glaucoma in the other eye. In prolonged use of atropin for corneal disease the tonometer should probably be used from time to time to control the effect of atropin on the tension.

Simple glaucoma is often a very slow process. Laqueur's attacks went on for six years before he and his physician Horner decided on an iridectomy. In the meantime the attacks were controlled by eserine. Javal depended on the use of drugs for five years as regards his right eye and for fourteen as regards his left eye; and at the time of the first operation on each eye its vision was in the neighborhood of one-half normal. The first thing to do with a glaucomatous eye therefore is to attempt to reduce its tension with either pilocarpin or eserine, the latter being the more powerful drug. The use of pilocarpin is commonly begun with a one per cent. solution, that of eserine in a strength of one to five hundred. At the same time, since glaucoma is often associated with an abnormally high general blood pressure, systemic measures to counteract this, and also clearing of the bowels, are indicated. Morphine seems to have a very favorable influence in many cases of acute glaucoma, not merely relieving pain but lowering tension. But most glaucomatous eyes come sooner or later to operation. Laqueur, himself responsible for the introduction of eserine in ophthalmology, lived for twenty-nine years as a testimonial to the value of iridectomy. This

operation was first used for glaucoma by Von Graefe, Laqueur's teacher, in 1856. Before that time the only operation for glaucoma had been puncture of the cornea or sclera, which gave only temporary relief. Laqueur, who had an opportunity to examine Javal's eyes, attributed the fatal outcome in the latter's case to the iridectomy having been put off too long. In reading Javal's own statement this criticism seems to be well supported. In Javal's right eye the iridectomy was preceded by two sclerectomies. But, unfortunately, iridectomy has a very varied record. Although in some instances its results are brilliantly favorable, in other cases it seems capable of converting a relatively slow and non-inflammatory process into a rapid and malignant one, which may lead to enucleation of the eye on account of uncontrollable pain. This is sometimes due to the operation having been improperly carried out. If, as is generally agreed, iridectomy acts by reopening the filtration angle of the anterior chamber, then iridectomy for glaucoma must include the root of the iris. But it sometimes happens that the result is very unfortunate even where, as Laqueur states to have happened with Javal, the performance of the iridectomy was entirely correct. And on the other hand, the result is sometimes good where the iridectomy was imperfect.

For years, therefore, attempts have been made to find a suitable substitute for iridectomy. These have generally aimed at the formation of new drainage channels for carrying off the intraocular fluids. Heine considered that this end could be best reached by separating the ciliary body from the sclera over a considerable area, thus allowing the aqueous humor to drain into the suprachoroidal space. Heine enters the eye through the sclera back of the ciliary body, and passes a spatula forward just inside the sclera until the anterior chamber is reached. This operation,

ago it cost the community, in doctors and nurses and undertakers bills, not less than \$25,000. If each life be reckoned, as is usual, at a cash value of \$5,000, and the time lost by workers is counted, then the total cost of this one disease through one season amounted to more than \$80,000.

Three years ago there was an outbreak in the spring. In all previous experience for each one case in April and May there were twenty or more in July and August. We immediately started a thorough investigation of and campaign against the threatened epidemic. The results justified our action. Few more cases arose. By June there was only one, and that early in the month. There were none in July and none in August. In September, two weeks after the fair, there was quite a formidable outbreak on north Ninth and north Main streets, close to the fair grounds. After the suppression of this no more arose till the following year, and then but little.

That summer of 1910 was not the first time that typhoid had followed the fair. You should know that it is not alone those who are actually sick who spread typhoid fever. There are cases that continue to discharge in their feces germs of the disease for weeks, months, and even for years after apparent recovery. Moreover there are types of the disease so mild that the individual does not know he is sick, but continues working and visiting and distributing bacilli as dangerous as though himself seriously ill. Now, among the ten or fifteen thousand visitors of fair week are sure to be a score or more of these typhoid carriers. Fair week comes in the season of greatest number of flies also. I need say no more to show the menace of fair week, unless those privies on the ground are more carefully disinfected and screened than has been done.

Previous to 1911 the fair authorities had simply sprinkled a little lime on the de-

jecta, following a practice that was formerly considered useful, but which is now known to be useless. During the fair of 1911 by my advice the dejecta were continuously and systematically sprinkled with a strong solution of carbolic acid. No typhoid followed the fair that year. I suppose the same thing was done last year.

Now, while there has been no serious amount of typhoid for three or four years, yet, under present sanitary conditions it may come. We are not safe. We must improve our defenses and be vigilant if we would remain free from invasion by this insidious enemy. We can be free if we will.

Preliminary to a discussion of measures of prevention you should know the basic fact upon which all anti-typhoid sanitation is founded. It is this—typhoid fever is a filth disease. Every one who has ever had typhoid has had it because he has taken into his stomach somewhat of the discharges of a previous patient, either of sputa, or of urine, or of feces—usually the latter. There is no other way.

Our problem then is to keep mankind from eating or drinking the dejecta of mankind. While at first flush this may seem to you an easy thing to do, it is actually a complicated task. Slight contamination will carry disease. The following are the recommendations for our community.

First, compulsory sewer connection. Nothing you can do will improve health conditions so much as this one measure. Sewers should be extended to the uttermost limits of the town, and the town should be extended to take in all the suburbs, including the fair grounds.

Second, where there are no sewers, and until sewer connection can be made, all privies should be made fly tight. The room should be screened, but especially should it be impossible for flies to enter the vault.

Third, privy vaults, though fly tight, are

still a menace to the eisterns of the neighborhood. Built as most eisterns are the walls often crack, but oftener become worn so thin as to permit seepage of soil water. It is this soil water that contaminates our eisterns. Therefore, the water from all eisterns should be tested each spring and as frequently thereafter as the health officer or householder may think necessary. Either this or close all eisterns.

Fourth, careful protection of our city reservoir.

Fifth, regulation of the selling of milk in the city. As a condition for receiving a license to sell, each seller should be rigidly required to report promptly all cases of sickness in his family, among his employees or the family of his employees.

Sixth, strictly enforced measures for preventing the breeding of flies. To this end there should be compulsory cleaning of every lot, corral, stable yard, stable and barn every week from April to October, the refuse to be burned or hauled to a suitable place beyond the city limits.

Seventh, proper quarantine of each typhoid patient. This implies thorough sterilization of the discharges of the patient, of all clothing worn by him, and of all eating utensils used. None but necessary nurses should touch the patient or handle any of the aforesaid clothing, etc., until after disinfection.

Eighth and finally, anti-typhoid vaccination.

These measures will prevent the spread of typhoid within the town. They will not prevent its introduction from without. No community can be absolutely safe from typhoid fever until the larger community surrounding it is free. There is now everywhere more typhoid in the rural districts, proportionately, than in the urban. This calls for action by county authorities. Supervision and control of sanitary conditions of farms is needed. The county authorities should especially watch all the con-

struction camps on railroads, reservoirs and ditches. These have been the starting point of more than one epidemic. The sanitation of fair grounds, athletic parks, etc., should, where these are outside the city limits, be guarded by the county health officer.

The best work could be done if there were co-operation of town and county authorities in a statewide campaign under the supervision of the State Board of Health. By such a campaign the disease could be driven from the state in two years' time; and the same measures that would eliminate typhoid would lessen other diseases. Of course this would cost something. But, in my humble judgment, the state, the counties, and the towns, could well lessen expenses in other matters in order to provide money for this. According to me this is the line of our first duty—the protection of the health and of the very lives of our citizens. If it were a Mexican army or a Japanese, that was killing our citizens, we would spend no end of money to protect and defend. It is an easy guess that our people will soon demand as energetic protection against the silent, invisible, but no less deadly enemies—the bacteria of disease.

But meanwhile, and until the state is aroused, we in our community must not lag. Typhoid fever must be destroyed.

---

#### TRIBUTE TO DR. GILDEA.

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The following is an extract made from the letters of R. L. Watkins and D. P. Mayhew of Colorado Springs:

Dr. Patrick Frederick Gildea has passed away from earth's work and honors, to reap in a better world the sure reward of a life well spent and rich in service and good deeds.

He was born in Worcester, Mass., February 15, 1865, and prepared for his advancement in his life work of the physician,



by graduating from Columbia College of Physicians and Surgeons, New York, in 1889. The following two years he was house surgeon at St. Vincent hospital, New York city, then completing his studies abroad, he specialized in laryngeal work, taking courses in London and Paris and a year in Vienna.

In 1892 he came to Colorado Springs, where he has been actively engaged in the practice of medicine until the sudden illness that culminated in his death, which occurred March 6, 1913, in California. Early in his practice he became associated with Dr. Samuel Edwin Solly, which connection continued until the death of the latter.

Dr. Gildea was a member of the American Medical Association, and the American Laryngological, Rhinological and Otological Society; he has been president of the El Paso County Medical Society, and has been associated with business and social organizations of the city, being a member of the El Paso Club and the Colorado Springs Golf Club.

No physician was ever held in higher esteem by his colleagues, both for his knowledge and skill as a specialist and for the integrity of his character. His reputation was national and he counted among his friends many of the most celebrated men of the country. He loved his life's work as only a true physician does. Without distinction or partiality he gave his patients the benefit of his research and experience; to each case, conscientious, individual study, for with all his respect for precedents as a true scientist, Dr. Gildea was an independent thinker, and tenacious of his conclusions.

He is most widely known, of course, for his work in rhinology and otology, a field which he made peculiarly his own, and in which lay, perhaps, his greatest success. Unfortunately the demands of an enormous practice and the limitations imposed

by the condition of his health, forbade his writing, and thus attaining the full flower of his fame. The physicians of his own specialty who knew him well, however, be always in his debt for the insight which enabled him to elucidate many obscure phases of his art. His many patients may well be grateful to him for those accurate observations and deep reflections that gave him power to relieve possessed by few.

The originality of his mind manifested itself in many ways. Chief among the contributions it afforded to science should be mentioned his determination of the part played in certain throat and lung affections by the nasal reflexes, and the susceptibility of certain hyperaesthetic points in the nose to the influence of slight stimuli, such as odors. Many a cough has been relieved and many an asthmatic attack cut short by his treatment based upon these observations.

The skill of touch he possessed was noteworthy among a group of his coadjutors famed for skill. Abhorring the major operative side of his specialty he was enabled by that skill to prevent or cut short those special diseases whose development leads of necessity to major surgery. What otologist in large practice found it necessary to do so few operations on the mastoid as he? The marked difference in this regard can be attributed only to a difference in skill or to his original methods of treatment.

In the handling of the general condition of his patients he was no less successful, and in the treatment of his cases of phthisis no less original. He was among the first to call attention to the importance of associated disorders of the abdominal organs in these cases and to the necessity for their surgical correction.

The cheerful optimism with which he faced all crises in his own life went with him into the sick room and was communicated to the patient and to the family. He

would not allow anyone about who was inclined to look on the dark side of things. His cheering looks and words instilled confidence, and his certainty of a favorable issue of the malady brought into play all the powerful forces invoked by suggestive therapeutics. No man had more influence with and upon his patients nor influenced them more for their own good.

By his death his colleagues have lost a valued coadjutor and the community a rare power for good.

## Constituent Societies

### WELD COUNTY.

The regular monthly meeting of the **Weld County Medical Society** was held in the city hall, Greeley, Monday evening, April 1st, with a large and enthusiastic membership in attendance. Dr. D. W. Reed, the worshipful president, in the chair. At the conclusion of routine business the president took considerable pleasure in calling upon Dr. O. S. Fowier of Denver, who gave an illuminated address upon his method of disentangling ureteral kinks and anchoring the kidney so that it will remain in "statu quo." Neat strips of fascia lata are utilized in lieu of other ligature material in swinging the kidney in its proper location which, according to clinical data adduced, prevents hydronephrosis and removes all discomfort incidental to a curved ureter. The paper was discussed by Drs. Pogue, Dyde, Thompson and other local lights. As guests were entertained Dr. Green of La Salle and Thompson of Greeley. Meeting adjourned in good order.

JAMES W. LEHAN, M. D.  
Secretary.

## News Notes

Dr. Edward C. Hill and wife have recently returned from a visit to California.

Dr. Wm. H. Crisp has been chosen vice president of the Denver Philosophical Society.

Dr. Oliver Lyons attended the recent meeting of the American Theological Society in Boston.

Dr. McHugh of Fort Collins has offered his services as a lecturer to the County Superintendent of Schools. He will talk to the pupils in country schools. His first lecture was on the care of the eyes, ears, nose and throat.

Dr. J. A. McCaw wishes a physician to share his office, 428 Majestic building.

The State Board of Health has re-elected its former officers: President, Dr. Sherman Wil-

liams; vice president, Dr. Jacob Campbell; secretary, Dr. Paull S. Hunter; treasurer, Dr. Crum Epler.

Dr. E. K. Shelton of Antonito was operated upon for appendicitis on April 29th.

Dr. E. Stuver of Fort Collins had a narrow escape on April 16th. In trying to avoid running into a team which was occupying a large part of his side of the road, his automobile ran down over the side of a bank four or five feet high, turned turtle and caught him under it. Fortunately he sustained no serious injuries and kept right on with his work.

## Book Reviews

**Skin Grafting.** For Surgeons and General Practitioners. By Leonard Freeman, B.S., M. A., M.D., Professor of Surgery in the Medical Department of the University of Colorado, Surgeon to St. Joseph's Hospital, The National Jewish Hospital, and the City Hospital, Denver, Colo. With 24 illustrations. St. Louis: C. V. Mosby Co., 1912.

Dr. Freeman's monograph presents a very complete discussion of skin grafting. It contains an entertaining account of the history and development of this important part of surgery along with the latest additions to our knowledge of it. The sensational, and now well rewarded, work of Alexis Carrel in the preservation and transplanting of tissues should give to skin grafting a lively freshness. But this was not the influence that prompted Dr. Freeman to write. Some people read because they intend to write. This author has written because, for many years, he has read and thought. The colleagues of Dr. Freeman in Colorado may remember that more than a dozen years ago he was very much alive to the possibility of filling up epidermal defects by such foreign substances as egg membrane. The recent appearance of his monograph shows how the subject has lingered in his mind and finally reached its fruition in the complete expression of the author's views on skin grafting.

A Colorado reviewer will find more in "Skin Grafting" than a dissertation on one element of surgery. He will see in the book the character of the author translated into his writing. The style is simple, direct and frank. It is without ornament but never without force. The author does not linger to consider fantastic theories about the nature and growth of transplanted skin. He mentions them merely for the sake of courtesy and completeness. He frowns upon special instruments and complicated dressings. An ordinary razor is as good as any special device for cutting grafts. A single layer of gauze fastened over the grafted surface is a good means of holding the grafts in place.

Dr. Freeman has given us a book that indulges at once our laziness and our surgical yearnings. It is small and does not weary the hand. Its style is so clear and easy that it does not tax the brain. It is interesting and

holds the attention. Here, then, at last, is a book upon a surgical subject that one can take to bed and read in the silent hours without being bothered by the sand-man.

### Contents.

- Chapter I.—Terminology; Early History.  
 Chapter II.—Comparative Vitality of Grafts from the Old and from the Young; Heterogeneous Grafting; Dangers of Transferring Disease; Influence of the Patient's General Condition Upon Skin Grafting; Surgical Cleanliness.  
 Chapter III.—The Method of Reverdin.  
 Chapter IV.—The Method of Thiersch—Its Use in Special Cases.  
 Chapter V.—The Wolfe-Krause Method.  
 Chapter VI.—The Method of Hirschberg—Skin-Periosteum; Bone Grafts.  
 Chapter VII.—The Transplantation of Mucous Membrane; Anomalies in Skin Grafting; Sponge Grafting.  
 Chapter VIII.—Grafting from Animals.  
 Chapter IX.—Grafting in Lupus, in X-Ray Burns, on the Cranium and in Connection with the Eye and Ear.  
 Chapter X.—Local Anesthesia in Skin Grafting.  
 Chapter XI.—Histology and Pathology.  
 Chapter XII.—Brief Comparison of Different Methods of Skin Grafting. C. S. E.

**A Manual of Pathology.** By Guthrie McConnell, M.D. Second Edition. W. B. Saunders Co., Philadelphia, Pa.

This manual, now appearing in the second edition, is intended, as the author states in the preface to the first edition, "not to take the place of the more voluminous text-books on pathology but to enable the student to rapidly acquire the salient points of a subject." Herein lies a certain element of danger; for the student is naturally tempted to take a short cut and "cram" his memory with detached facts in the compend, so as to pass the examination, rather than follow the longer, but more logical route of inductive science as expounded in the larger textbooks which appeal to the reason more than to the memory.

Unless compends of this character are supplemented by didactic lectures it is questionable whether there is a reason for their existence, especially in such a wide field as special pathology.

For the purpose intended, this manual is well written and gives an excellent résumé of the subject matter. The illustrations which appear almost on every other page have evidently been chosen with great care and are beautifully executed, making up in many cases for brevity of description in the text.

**Muller's Sero-Diagnostic Methods.** Authorized Translation from the Third German Edition, by Ross C. Whitman, B.A., M.D., Professor of Pathology, University of Colorado School of Medicine. J. B. Lippincott, Philadelphia. A signal service has been rendered the English-speaking laboratory worker by Dr. Whitman's excellent translation of Paul Th. Müller's popular little compend on the technic of

sero-diagnostic methods. Within the compass of a small volume are concisely brought together practically all the procedures employed in serologic work which hitherto were available only in special journals devoted to the subject or scattered in the larger text-books on Bacteriology and Bio-chemistry.

Commencing with the technic of injecting animals, of taking blood and the conservation of sera, the diagnostic methods proper are taken up comprising the precipitation and agglutination reaction, and that of floccule formation, bactericidal reaction in vivo and in vitro, hemolytic reaction and complement deviation test which includes the Wassermann reaction in its various modifications.

At best the rôle of the translator is a thankless one. While Dr. Whitman modestly calls his work a translation, the additions that he has incorporated in the book of methods not appearing in the original and requiring a perusal of an enormous literature should place his labors as equal in credit to that of the German author. Thus we find added concise details of the Meistagmin reaction of Ascoli and Izar, the cancer diagnosis of Freund and Kammer, the cobra venom tests, the complement fixation test for gonorrhoea as carried out by Schwarz and McNeil, etc.

The only criticism that can be offered is the typographic make-up, which is not so well adapted for the purpose as the original German. The latter is of smaller compass, thinner paper, and, what is of particular advantage, interleaved throughout with blank sheets for convenient notations of new methods as they appear.

The few illustrations are poor in the original and suffer still more on photographic reproduction in the translation. The price is considerably higher than the original, but the translation is easily worth it. Aside from these mere incidentals, the subject-matter, which is the real point at issue, deserves the highest commendation.

In view of the increasing importance of sero-diagnostic methods in the practice of medicine this little volume is a valuable addition to our literature. P. H.

**Manual of Medicine for Nurses.** Second edition. By George Hoxie, M. D., Physician to the German Hospital, Kansas City, Mo., and Pearl L. Laptad, formerly Principal of the Training School for Nurses, University of Kansas. 12mo, 351 pages, illustrated. Cloth, \$1.50 net. W. B. Saunders Co., 1913, Philadelphia and London.

This work will prove helpful not only for the trained nurse, but for all persons responsible for the care of the sick and injured. It embraces a series of lectures on disease and disease conditions, with carefully outlined instructions for the management of emergency cases and for the proper handling of contagions.



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- 3. Because it is the best means of avoiding envy, jealousy, local animosity and internal dissensions which have always discredited our profession, and if you will permit them, will seriously damage your professional career.
- 4. Because it will help you to improve your financial condition by aiding you to better your business methods in your work.
- 5. Because it tends to promote unity by which the profession gains in influence and commands a higher respect from the community.
- 6. Because the County Medical Society makes it possible to unite the profession into a compact organization to its material advantage and that of each of its members.
- 7. Because it will enable you to progress in your medical career and become a member of the State and National Medical Associations.
- 8. Because you owe all this to yourself and to your professional co-workers.

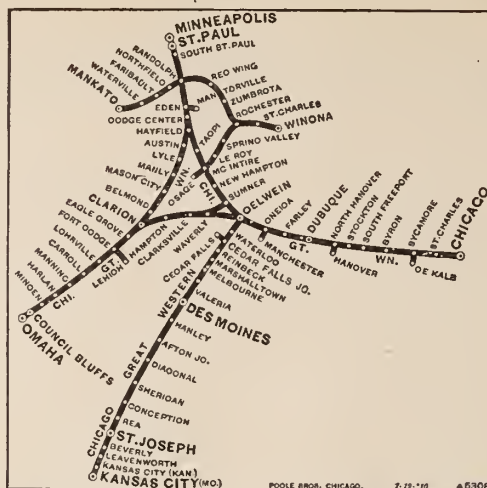
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.....Secretary.

I hereby make application for membership in your society.  
I graduated in medicine at the.....  
in the year..... I was granted a license to practice medicine in Colorado  
in the year.....  
I have been in the practice of medicine before coming to Colorado in the City of  
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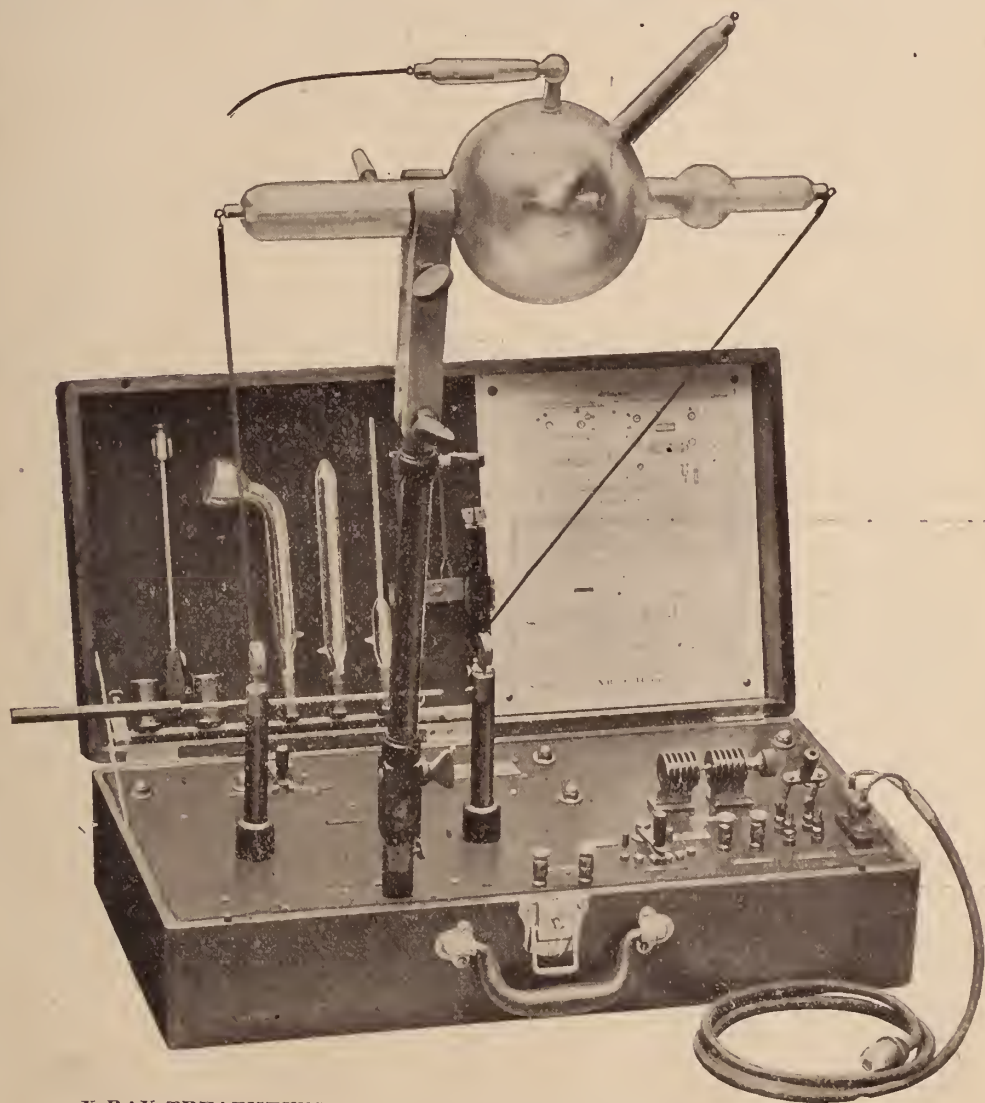
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1915—C. F. Gardner, Colorado Springs; E. A. Whitmore, Leadville.  
1916—A. G. Taylor, Grand Junction; J. C. Chipman, Sterling.  
1917—Horace G. Wetherill, Denver; A. R. Pollock, Monte Vista.

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Term expires.

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1914—Walter A. Jayne, Denver. A. C. Magruder, Colorado Springs.  
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**Publication:** C. S. Elder, Chairman, Denver (1913); Edward Jackson, Denver (1914); Geo. A. Moleen, Denver (1915).

**Auditing:** Chas. B. Dyde, Chairman, Greeley; J. C. Chipman, Sterling; Geo. Curfman, Salida.

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## Constituent Societies and Times of Meeting.

## Secretaries.

Boulder County, first Tuesday in each month.....	F. H. Farrington, Boulder
Clear Creek County.....	A. D. Fraser, Idaho Springs
Crowley County, second Tuesday of each month.....	J. E. Jeffery, Ordway
Delta County, last Friday of each month.....	W. Scott Cleland, Delta
Denver County, first and third Tuesday of each month.....	Wm. M. Wilkinson, Denver
El Paso County, second Wednesday in each month.....	J. H. Brown, Colorado Springs
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Garfield County, first Thursday of each month.....	A. E. Gill, Gulch
Huerfano County.....	P. G. Mathews, Walsenburg
Lake County, first and third Thursdays of each month.....	Jas. G. Schall, Leadville
Larimer County, first Wednesday of each month.....	E. Stuver, Fort Collins
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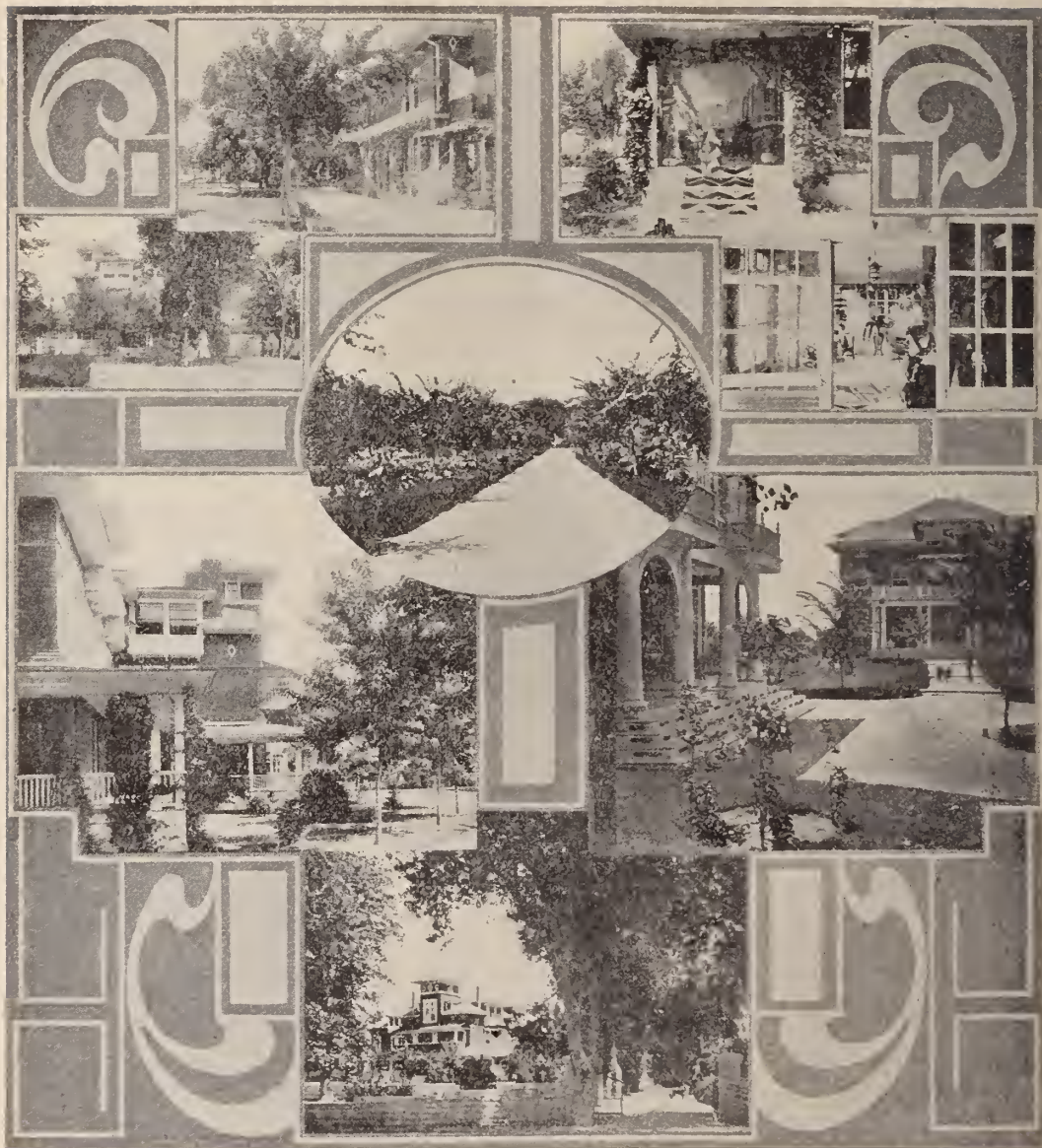
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## *Editorial Comment*

### MEDICAL PROVERBS.

There are many meanings that cling to the word "proverb." The most essential of these is wisdom and brevity. Not every succinct, prudential rule becomes a proverb, however. An expression must have been a long time in general use as a statement of some practical truth before it can be called by the same name that has been given to the saws of Solomon.

The antiquity of a proverb makes it a poor exponent of an art, like medicine, that changed almost as rapidly as a drifting cloud. It may serve to show the esteem, or the lack of it, in which medicine was held at the time when some one shot the verbal shaft which lodged and "staid put" in the memory of men.

Philologists tell us that every word is burdened with history. This history is disclosed only to those patient in the pursuit of it. Much more readable is the history that is revealed in those sharp sayings that seem to fit so nicely upon the tongue.

A writer in the British Medical Journal has made a collection of medical proverbs. Nearly all of them contain some implication derogatory to the physician or his art. They might be suspected of having found expression in the late Legislature of Colo-

rado, which was so hostile to the illusory medical trust. But proverbial clarity is not common to legislators. They make the laws over which attorneys wrangle and about which courts disagree.

The British writer attributes the bitterness of medical proverbs to the irascibility of sick people who are so often impatient of any treatment that does not cause the prompt suppression of their disorders. This is not the only reason for the unhappy turn of the medical aphorism. Just as men are esteemed wise when they are not, or foolish when their talents are unappreciated, so sententious sayings are called proverbs when other qualities than their wisdom furnish their attraction. Some of them gain currency because of a tuneful rhyme or alliteration in which they are expressed. Others are remembered because of their subtle humor.

Humor is a great luxury enjoyed by some and paid for by others. It is mitigated savagery. Consider the exaggerated forms of it that appear in the comic supplement of the yellow papers. An ardent swain serenades his sweetheart. Instead of cooing encouragement which he expects as his reward, an irate parent pours a pailful of water upon his head. Some mischievous children play their inhuman pranks and receive a well-merited spanking. The latter familiar plot is a kind of dicephalous exhibition of humorous cruelty.

These may be poor examples of humor, but that is because they are so grossly exaggerated. The humorous saying is always derogatory to its subject. The maxims that concern the minister or the lawyer are no less bitter than those that relate to the physician.

There is, first of all, a proverb that relates to the very common failure of the physician to find interest in religious questions—"ubi tres medici duo athei" (where there are three doctors there are two atheists). This saying is very old and has been followed into medieval darkness. It has proven a stinging rebuke to physicians of pious inclinations. Sir Thomas Brown called it "the scandal of my profession." If, as any religious enthusiast would insist, atheism and heterodoxy were interchangeable terms, it must be admitted that the proportion of atheists set forth in the proverb is too low rather than too high.

There is a saying that expresses the reliance of the physician on the therapeutic processes of the body. It is almost universal and appears with nearly the same expression in many languages—"God heals, but the physician gets his fee." It is true that in many diseases the physician is but a watchman, ready to encourage any natural event that promises well for the patient, or to suppress any unfavorable symptom with such therapeutic energy as he can command. The only one who would deny the very common truth of this proverb is the pretender who has brought these bitter utterances upon us. The man who "aborts" typhoid and cures people who have a "touch" of pneumonia is a menace to the people and a too frequent pest to his profession.

The *vis medicatrix nature* is not always dependable, however. As a result of its treacherous character, physicians have had for two thousand years to face the story of that woman mentioned in more than one of the gospels: "A certain woman which

had an issue of blood twelve years, and had suffered many things of many physicians and had spent all she had and was nothing bettered, but rather grew worse." If some gynecologist could slip back through these two thousand years and relieve that poor woman of her fibroids— But the fact is recorded and cannot be erased.

The story of the bald-headed quack who invented an alopecia cure is trite. Jesus gave its moral a refined and laconic expression: "Physician heal thyself." Illness in a physician must shatter the public confidence in his abilities. There is, however, an adage that declares that the older one grows the more he learns of the strength and frailties of his own constitution. "Every man is a fool or a physician at forty," said the vigorous old emperor, Tiberius.

The biting saying that "One doctor makes work for another" is worthy of some consideration. The criticism of the work of one doctor by another is responsible for much of the apparent truth of this proverb. We are busy in the abdomen, making and breaking adhesions. We divide a "Jackson's membrane" and unite the stomach to the duodenum. If an abdominal operation is done and a complaint resembling the one which demanded surgery should arise the next physician summoned is sure to suspect "adhesions." Many a surgical operation, justly or not, has made way for another.

The Talmud contains this mysterious advice: "Choose no town for thy residence where no horse neighs and no dog barks, and where a physician is the head man." Let not this proverbial counsel be considered a knock at Denver. It was written when the world was young, long before the cry of "Westward, ho!" was heard. It is true, however, that in Denver the neigh of the horse has been replaced by the sputter of gasoline, the dog is hunted to

extinction by the licensee man and a physician is our mayor.

These are but a few of the short, sharp sayings that relate to the physician and his work. They have lived long and they sting like a mustard plaster. Many more might be recited which point like a finger to our personal and scientific weaknesses.

Dr. Jayne in his presidential address before the State Society showed our progress in the understanding of the *vis medicatrix nature*. Armed with sera and with vaccines we do not always have to wait for the development of this therapeutic power. We promote its influence and excite it to operation.

With minds trained in the art of the surgeon and palms itching for practice, it would now be a woman's fault if she should suffer for twelve years with "an issue of blood."

We have reason to hope that succeeding generations will give a better account of us.

#### ADVICE TO SURGICAL PATIENTS.

Leonard Freeman, Denver, (Journal A. M. A., April 12), discusses the necessity for and the general character of advice which should be given patients on leaving the hospital after surgical operations. He notes the advantages of shortening the time that the patient is kept in the hospital after operation and the disadvantages which result from the passing of these patients from under the observation of the operator to follow their own ideas or the usually unreliable advice of those around them. The general instructions of the surgeon should explain the post-operative condition to the patient in such manner as to remove all occasions for worry. Abdominal supporters, it should be explained, are of little service except to give a sense of security and comfort, and dressings are simply to protect the scar. He gives special directions for overcoming constipation without becoming dependent on cathartics, and explains that the ordinary diet can, except in special cases, usually be resumed. With regard to exercise, going up and down stairs, returning to work, etc. he says that the tendency has been to keep the patient inactive and idle too long. But the importance of rest and sleep and of not indulging in exhausting social duties, particularly in conversations about the operation, he emphasizes strongly. Explanation of several post-operative conditions which are to be expected, he says, will relieve the patient of much physical and mental strain and hasten complete recovery.

## Original Articles

### THE PATHOLOGIC FUNCTION OF THE LIPOIDS.\*

EDWARD C. HILL, M. D.,  
DENVER, COLO.

The body fat of human beings is produced by the storing of food fats, as a derivative of carbohydrates and as a product of metabolism. It varies in composition and consistency, according to the diet and the part of the body concerned. It occurs as an emulsion in the circulating fluids (giving a milky appearance to chyle), as large drops in the special cells of adipose deposits (labile fat), and in a combined invisible state when assimilated by healthy body cells, exclusive of adipose tissue and the glands. In the last named structures microscopic fat globules are present physiologically in varying numbers, being most abundant in resting cells. Even in the kidneys the stable invisible fat constitutes from 15 to 23% (Hanes) of the dried organ, and the solids of the normal human heart are soluble in ether to the extent of 15% (Starling), of which more than half is fat.

Strictly speaking, the term lipoids (Hanes) should be restricted to those lipins, or fatty substances, called conjugate lipins (compound lipins containing protein radicles proteolipins, or lecithoproteins; carbohydrate radicles glycolipins, or cerebrosids; or phosphorus radicles phospholipins, or phosphatids) and the sterols (natural terpenoalcoholic derivatives), of which cholesterol is the leading member. Simply stated, in the broad sense lipoids are fatty substances which are soluble in ether and which are not decomposed by alkalis to form soaps.

Ernest Overton, in 1895, was the first

\* Read at the annual meeting of the Colorado State Medical Society, September 25, 26, 27, 1912.



to thoroughly investigate plasmolysis and the passage of various solutions through the protoplasmatic membrane. He found that such substances as easily pass through this membrane and are readily taken up by cells are soluble in fat. He showed further that the phenomena of general anesthesia depend upon the chloroform and ether being readily absorbed and stored up by the fatty constituents of the nervous system. He concluded that protoplasm "is enveloped in a thin layer which is either rich in fatty substances or is a thin film of fat or oil."

Lecithins are waxy phosphorized fats, present in every living cell, synthesized from relatively simple substances, varying in composition according to the source, and most abundant in the brain and nerves. On hydrolysis with acids or alkalies, they are broken down into fatty acids, phosphoric acid and the base cholin. Lecithin appears to represent an intermediate stage in the utilization of neutral fats by protoplasm (Starling). In nerve degenerations lecithin is diminished and the extractives are increased in amount. Halliburton has shown that the breaking down of lecithins in degenerative diseases of the nervous system causes a very considerable increase of cholin in the blood and cerebrospinal fluid. Lecithalbumins, consisting of albumin and phosphorized fat, are present in milk and in the stomach and liver. During autolysis the lecithin of cells changes to small refractile granules of myelin, which swells up in water into various bizarre figures.

Cholesterol, or cholesterin, in combination with fatty acids, is likewise a constant and important constituent of living cells, being a product of nerve metabolism. The cholesterol esters of the sebaceous glands are attacked with difficulty by ferments or bacteria, and thus serve as a protective coating. Because of its chemie stability, Starling believes that the part played by cholesterol "is that of a frame-

work or skeleton, in the interstices of which the more labile constituents of the protoplasm can undergo the constant cycle of changes which make up the phenomena of life."

Lipoid emulsions (in practice, a crude alcoholic extract of the lecithins of the normal or syphilitic heart or syphilitic liver) have a marked effect as antigens in causing deviation of complement (absorption of middle-piece of hemolytic complement in the presence of syphilitic serum. Cholesterol, sodium oleate and palmitate also react with syphilitic sera. Explanations of the reaction of syphilitic serum with lipoids are various and conflicting. The reacting power of sera is diminished by heating at 55°-57°C. for 30 minutes, and this treatment deprives all but syphilitic sera of their reacting power (resident in the globulin fraction). The antigenic power of mixed lipoids is much greater than with any single lipid.

Faust and Tallquist appeared to demonstrate a few years ago that bothriocephalus anemia is caused by a hemolytic lipid contained in the proglottides of the tapeworm. They also found a lipin (oleic acid) in the stomach and bowel of subjects of pernicious anemia, and recommended glycerin to render the oleic acid innocuous by forming triolein. Vetlesen has given one-half ounce of glycerin three times a day in a severe case of this disease, with very good results, and Effendi (International Clinics) confirms the value of glycerin. The only by-effect when the dose of glycerin was increased to 70 gm. t.i.d., was a transient diarrhea.

A diet composed largely of fats puts a strain upon the oxidative power of the body, particularly when this is lowered by disease, as in diabetes mellitus, and leads to the accumulation of butyric acid (to which other fatty acids are reduced before oxidation) and to its oxidation products, diacetic acid and acetone. Starvation acts

in the same manner as a fatty diet, since a fasting person is living almost entirely off his own body fat. Accompanying this acidosis, there is always a relative excess of ammonia nitrogen in the urine, said ammonia having been called out from the tissues to neutralize and form salts with the acids.

Sixty-five years ago, Virchow classified pathologic fatty changes as fatty infiltration and fatty degeneration, the former being capable of returning to a normal condition, while the latter he conceived as a true and irremediable necrobiotic process. Modern investigations appear to prove that "the accumulation of fat in cells is always an infiltrative process." (Hanes). For example, starved dogs have been fed on linseed oil or mutton fat, and after phosphorus poisoning the fatty condition was found largely due to the presence of this particular oil or fat. Rosenfeld has determined that the total fats of a fatty infiltrated organ may be less than normal. Bacterial toxins (typhoid, diphtheria) and poisons interfering with oxidation (phosphorus, arsenic, antimony, chloroform, alcoholism, pernicious anemia, acute yellow atrophy) do not prevent the entrance of fats into the cells, but do prevent the utilization by the cells of the fat, which now accumulates as visible fatty globules, instead of being combined with the protoplasm. Starling mentions one instance in which the heart muscle which had undergone extreme fatty "degeneration" and was loaded with fat globules, contained only 19% of its dried weight of fat, whereas a heart muscle taken from a normal animal at the same time, showing no visible fat globules, contained 17% of fat. The yellowish necrotic plaques of atheromatous blood-vessels show fatty and calcareous deposits, including typically doubly refractive fluid crystals of cholesterol esters, whose presence, says Hanes, are characteristic of chronic degenerative lesions.

Chronic inflammatory processes strongly predispose to fatty changes in the organ affected, as exemplified in the fatty epithelial cells and fatty casts of chronic parenchymatous nephritis.

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### BULLET WOUNDS OF THE LIVER WITH REPORT OF A CASE\*

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H. FREUDENBERGER, M.D.,  
GRAND JUNCTION, COLO.

Bullet wounds are always interesting to the surgeon, because they tax his diagnostic abilities and his ingenuity. He must be ready to act immediately and intelligently. This is particularly true of bullet wounds of the abdomen in general. A bullet wound in the right hypochondriac or epigastric region may show no immediate signs or symptoms indicating injury to the liver. As with wounds in other parts of the body, pain, shock, hemorrhage, thirst, hyperaesthesia or anaesthesia over the wounded area, with or without muscular rigidity, may be present. The escape of bile externally or the protrusion of liver tissue from the wound are very evident signs of a liver injury. Pain is often masked by shock and frequently is not felt when the wounded person is in the stage of excitement. In some affections of the liver it is referred to the right shoulder, and I have wondered if the pain complained of so severely in the right shoulder by the patient whose case I shall report, was entirely due to a wound of shoulder. Shock is variable in intensity. It manifests itself immediately or in a very short period of time after the infliction of the wound. Usually it is in direct ratio to the size of the bullet that has done the injury. In two cases under my observation pain was slight and shock was absent. Hemorrhage may show itself externally, or it may be entirely internal, the signs and

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\* Read at the annual meeting of the Colorado State Medical Society, September 25, 26, 27, 1912.

symptoms varying with the location and extent of the wound. Thirst is usually proportionate to the amount of blood lost.

The diagnosis of hepatic injury is made by the location of the wound, the direction taken by the bullet, the protrusion of some of the liver tissue, the escape of bile and by exclusion. By this I mean the absence of symptoms or signs referable to injuries of other organs or tissues. The direction should be determined as nearly as possible by the position and the posture of the wounded person at the time of the injury and by the position of the gun-user at the time of firing the shot. A wound through the skin, fascia and muscles can be examined, either with the finger or a probe, to determine whether the bullet has lodged in these tissues or whether it has penetrated the liver. Opinions vary among surgeons in regard to the use of the probe. I have seen the probe used to excellent advantage and I have also seen it do great harm. The contra-indication rests upon the fact that it can rarely be made to follow the track of the bullet. This is particularly true if the abdomen has been penetrated. We should not fail to examine the back for a wound of exit when a wound of the abdomen exists. A wound of entrance and one of exit does not always enlighten us in regard to the course that the bullet has taken. Cases are on record that presented a wound of entrance and one of exit in which the bullet was deflected by the fascia and made its way beneath the tissues partly around the body. This reality and the one in which a bullet has perforated the abdominal cavity without producing serious symptoms, is so rare that it is mentioned only as a remarkable occurrence. A search of the clothing for the bullet and of the bullet holes for missing fragments of cloth should not be neglected.

The prognosis depends upon the general condition of the wounded at the time of the injury, upon his condition with reference

to shock and hemorrhage when seen by the surgeon, upon the location of the liver wound, upon the severity of the wound in regard to the damage that has been inflicted by the bullet and upon the caliber and kind of bullet used. The bullet used in military service is of small caliber, jacketed, has a high velocity and great penetrating power. If the wound from the compound bullet be at long range the trauma inflicted upon the liver is minimized, compared to its destructiveness at a range of 600 yards or less, at which distance the explosive effects occur. If the bullet is one of the leaden variety, usually used in revolvers, there may be a large opening and great destruction of tissue, because the velocity of this bullet is low, compared to the modern compound bullet, it is unjacketed, the surface is rough and it is easily deformed.

The danger of infection is more frequent with the ordinary leaden bullet than with the modern compound bullet, chiefly because of the production of a greater amount of trauma to the tissues. The wound may be infected by cartridges that have been carried in belts or pockets, or by their passage through dirty clothes and contaminated skin. On good authority it is stated that cartridges in original packages are usually sterile. The pathogenic bacteria most frequently carried into the wound are the staphylococci, streptococci and the bacillus of tetanus. If the bowel is also injured the colon bacillus will become a factor in the infection.

Favorable manifestations are slight shock and absence of hemorrhage and evident infection. Unfavorable symptoms and signs are pronounced shock and hemorrhage; later unfavorable manifestations are those of infection in the organ itself and peritonitis. Abscess, erysipelas or gangrene, involving the abdominal wall, may occur and produce a fatal termination. There is a possibility of the development



in the injured organ of an aneurism, a hematoma or a cyst. Shock, hemorrhage, peritonitis or tetanus may be the cause of death.

Statistics are not complete in regard to bullet wounds of the liver in civil life. In the "Medical and Surgical History of the War of the Rebellion" Otis reports fifty-nine cases of gunshot wounds of the liver, in which there were no other wounds, with a recovery of twenty-five. The facilities for treatment in civil life are better than in military life; laparotomy can be performed almost immediately and under aseptic conditions. In military life the condition of the men is better and their environments are more favorable. Considering the asepsis and surgical technique as practiced today, operative procedures in wounds of the abdomen generally give a good prognosis and low rate of mortality.

Wounds of the liver produced by bullets may present themselves as small notches at the borders, as fissures or furrows on the surfaces of the lobes, and as penetrations or perforations of the lobes. They are usually of a contused or lacerated character. Splinters of bone from the ribs may be carried by the bullet and produce a laceration of the organ or enter its substance. Pieces of clothing or foreign matter may enter with the bullet. There may be an injury or division of one of the large blood vessels or bile ducts, or the gall-bladder may be perforated. A bullet may strike the upper part of the abdomen obliquely and inflict a skin wound only, but, at the same time, it may also produce a laceration of the liver. The damage done to the liver can not be estimated by the appearance of the external wound.

Indications for treatment of bullet wounds in the region of the liver should be based upon the symptoms and signs presented upon examination of the patient. If conditions permit, an X-ray examination will be of great aid in locating the bullet.

In the absence of shock or evidences of internal hemorrhage it is sometimes impossible to determine whether a wound of the abdomen has penetrated or whether a viscus has been injured. In these doubtful cases exploratory incision is justifiable. If the abdomen has been penetrated and evidences of internal hemorrhage or severe shock exist, laparotomy should be performed immediately and the injury repaired. Morphine may be given hypodermatically to relieve the pain if an abdominal section is decided upon.

Prolonged search for the bullet is never permissible. If it is seen or felt and can be removed under aseptic conditions, without great injury to the tissues or organ and without danger to the patient, this should be done. If it is not found and symptoms and signs of pressure or infection occur later, its removal should not be delayed, providing it can be reached without endangering life.

If shock alone is present this is to be combatted with hypodermatic injections of atropine, adrenalin, camphorated oil, strychnia, ether, brandy or digitalin. The foot of the bed should be raised and the patient enveloped in blankets, with hot water bottles placed about the limbs. Injections of hot strong coffee and brandy per rectum or enteroclysis with normal salt solution act efficiently. The normal salt solution may be given subcutaneously.

Internal hemorrhage demands immediate abdominal section and search for the source of bleeding.

The presence of internal hemorrhage associated with marked shock is a contra-indication to the use of a general anaesthetic; in these cases local anaesthesia is indicated.

When an abdominal section is decided upon the wound should be cleansed antiseptically and the area about it painted with iodine. The incision can be made in the median line or sub-costally. It may be necessary to cut through the costal arch of

either the right or the left side; or several ribs may be resected if the wound is between one of the lower ribs of the right side. If the wound is in the right infra-axillary region an incision can be made below the twelfth rib, or between the ninth and tenth ribs in the mid-axillary line, excising part of the ribs, and either displacing the pleura or incising it.

Hemorrhage from the liver is controlled by deep sutures of plain catgut, by packing with plain, sterile or iodoform gauze, or by the use of the cautery. Secondary hemorrhage after the use of the cautery has been reported. Tying the sutures over a small roll of gauze or over rubber tubing has been advocated. If a bleeding vessel can be seen in the liver wound it should be grasped with forceps and a catgut ligature placed around it.

Drainage is advisable in doubtful cases and can be removed at the end of twenty-four hours.

The following is the report of a case which came under the care of Dr. F. D. Coltrin of Grand Junction and myself, and through the courtesy of Dr. Coltrin I present it.

J. S., male, age 38 years, single, American, habits fairly good; has worked as a rancher and as a cowboy.

On November 20, 1909, about 4:30 p. m., he was shot twice by a companion with intent to kill. The weapon used was a revolver carrying a .32-caliber cartridge. The shooting occurred on the desert, about a quarter of a mile north of the city limits of Grand Junction. The gun-user was in a sitting position when he fired the shots, and the victim was standing about fifteen feet from him.

The first bullet entered the right upper extremity at the point of the shoulder, ranging upward and inward. The wound was probed, but the bullet could not be located.

The second bullet entered the abdomen

immediately to the left of and a half inch below the xiphoid appendix of the sternum.

The victim of the shooting had been drinking and was slightly intoxicated. After the shooting he walked, with assistance, about a quarter of a mile. He was then placed in a buggy and driven to the hospital, which was six blocks distant.

I saw him with Dr. Coltrin about a half hour later. There were no evidences of shock, but he complained greatly of pain in the right shoulder. Morphia was given hypodermatically to relieve the pain.

The bullet that produced the wound in the epigastric region passed through his overcoat, vest, shirt and undershirt. The skin wound was circular, inverted and about 6 mm. in diameter. There was no hemorrhage from the wound. We determined, by the position of the gun-user and the wounded man that the direction of the bullet was upward and backward, but whether to the right or to the left, we did not know. On account of the absence of shock or evidence of internal hemorrhage we were not positive that injury to any organ in the abdominal cavity had occurred. Cases are on record where the bullet had rebounded, but we could not find the bullet in the clothes. The temperature was 99 degrees F., pulse 102 and of good quality, respirations 22. There was no vomiting, no spitting of blood and no hiccoughs. An aromatic odor could be detected in the breath. Thirst was present. Patient was catheterized, but no blood was present in the urine. Examination of lungs was negative. Within a half hour after I had arrived the pulse had increased to 130 per minute, and it was decided to open the abdomen in the epigastric region and explore the upper part of the abdominal cavity. The wound and the area about it was cleansed with a 1-4000 solution of bichloride, sterile water and alcohol.

The incision was begun in the median line at the xiphoid appendix, extended

downward for about three and a half inches toward the umbilicus and passed through the tissues of the abdominal wall and peritoneum. The incision was enlarged in a transverse direction to the left side and the costal cartilages cut through in order to get more room for the examination of the stomach and liver. A small notch was seen in the extreme left of the anterior border of the right lobe of the liver, produced by the bullet in its passage. The stomach was not injured. A considerable quantity of blood was present in the upper part of the abdominal cavity; this was removed with gauze sponges. No further trace of the bullet could be seen and the wound was enlarged transversely to the right, severing the right costal arch. The lower part of the right lobe of the liver presented and blood was running down over its surface.

On account of the small space to work in, even after the costal arch had been cut through, it was difficult to find the source of the hemorrhage. The lower edge of the right lobe was grasped between gauze sponges and pulled downward. The bullet wound could now be plainly seen in about the middle of the upper surface of the lobe and about three inches above its anterior border. The wound was about one and a half inches in length and about one-half inch in width. The edges were ragged. The contact of the bullet with the edge of the xiphoid cartilage probably threw it transversely with its trajectory, in which position it perforated the liver. Introducing the finger of one hand into the wound and the other hand beneath the liver, it was found that the bullet had perforated the right lobe and probably lodged in the lumbar muscles of the right side. There was no palpable difference in the size of the wound of entrance and that of exit. No further effort was made to find the bullet. Sutures of plain catgut were passed deeply into the liver tissue one-half inch from the

edges of the wound on the upper surface of the lobe. These sutures had to be tied very lightly; in fact, three tore through the liver tissue with extreme ease. After they were tied there was a complete cessation of hemorrhage.

The blood was washed out of the upper part of the abdominal cavity with warm, normal salt solution, a small gauze drain inserted and the wound in abdomen closed with through-and-through sutures of silk-worm gut. Pillows were placed under the knees to keep the abdominal muscles relaxed. The drain was removed in twenty-four hours.

There was considerable tension on the sutures through the muscles, fascia and skin, and the edges of the wound did not unite. A secondary operation was performed on the abdominal opening seven days later and the patient made a slow but uneventful recovery.

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#### DISCUSSION OPENED.

**Dr. Leonard Freeman, Denver:** So thorough a paper as this is, ought to have something said about it. In civil life it is the rule to operate upon all cases of abdominal perforation, with few exceptions. In military life, with the small jacketed bullet that Dr. Freudenberger spoke of, the rule is perhaps otherwise; they get well with much certainty if they are let alone. Hemorrhage is the thing with which we most frequently have to contend in liver injuries. It is very well to speak theoretically of the use of sutures, and sometimes they can be used with effect, as they were in the doctor's case. But nevertheless we severally have to depend upon the use of gauze. If there is a hole in the liver into which we can pack the gauze the hemorrhage can be stopped instantly. If, on the other hand, a piece of the liver is torn away or a furrow is made upon the surface, it sometimes is not so easy to control the hemorrhage, either with sutures or with gauze, because the sutures cut out and the gauze drifts away from the surface of the liver, or is pushed away by the blood which issues from the wound. The way to meet this difficulty should be known by ev-



everyone. I refer to the combination of sutures and gauze. Put a strip of gauze, or a folded pad, against the bleeding wound, and then, with surrounding sutures, tie the gauze down upon the raw surface of the liver. By that means hemorrhage can be controlled under almost any circumstances.

Another way that I have shown to be good, which I have published elsewhere, and which I have used also in the bladder where the prostate has been removed, is to take a long pair of forceps and a long strip of gauze. The gauze is packed into the wound, the outer end being retained in the grasp of the forceps, with the extremity of which pressure is made upon the packing. The handles of the forceps stick out through the abdominal wound, several inches from the surface of the abdomen. Then an ordinary thin rubber bandage is put around the body and the ends crossed between the handles of the locked forceps. This rubber bandage presses the end of the forceps against the gauze packing, which in turn rests against the bleeding wound in the liver. By inclining the forceps one way or the other pressure can be made in any direction and the forceps can be maintained in that particular direction by arranging the dressings around the projecting instrument.

I very much appreciate the doctor's paper, and think it a good one.

**Dr. F. N. Cochems:** This paper interested me very much, because I have had a number of cases of injuries to the liver, several gunshot wounds. In one we were fortunate enough to place the gauze directly through the opening in the liver and made it thick enough so that it acted really as a tampon and checked the hemorrhage. In this case we did not even have to suture. I have found, as Dr. Freeman says, that it is very difficult to place the suture so that it will hold tight enough to prevent hemorrhage, with the moving liver it is likely to cut through. Gauze packing without suture is really the better procedure.

One part of the paper interested me particularly, and that was the matter of diagnosis. I think Dr. Freudenberg said that the pain in the right shoulder was intense, and that they did not know whether the pain was due to the first bullet wound or to the wound in the liver. I believe that wounds in the liver frequently produce pains in the right shoulder. I believe these reflex pains are of high importance in the diagnosis of liver injuries.

About fifteen years ago I had a patient who was crushed as a result of being caught between two cars, and the distance between the two cars was but eight inches. There was an abrasion on the surface of the chest, and the man was in great shock. He was a very large, powerful man. In discussion with a colleague of mine in the matter of diagnosis of this case we disagreed as to whether the liver was ruptured or not. I believed the liver was ruptured, that he was having hemorrhage in the peritoneal cavity, and this diagnosis was made merely upon the intense pain in the right shoulder. A third man was called in and he agreed with me in the diagnosis of ruptured liver. We made a large, oblique incision, ex-

posing the costal arch. We found the liver had been ruptured, the right lobe almost broken in two. The line of fracture was from before backward. On the convex surface it measured eight inches; on the lower concave surface about five inches. The right lobe was practically broken in two as an apple would be broken by your hands. We sutured this entire great surface and checked the hemorrhage. In this case it was not so very difficult. The patient, however, did not live as a result of peritonitis which followed.

Another interesting bullet wound of the liver was a woman shot with a bullet through the arm, passing through the axilla, through the lung, through the diaphragm into the liver. Resecting two or three ribs, to get down from above instead of coming from below, I could feel the mushroomed bullet deep in the liver. The bullet having been mushroomed on account of its passing through the humerus. With great difficulty the bullet was lifted out of the liver with the finger, from above, through the diaphragm. As it passed through the diaphragm it slipped from the tip of the finger and was lost in the pleural cavity. For a moment it looked as if it were lost for good, but by a simple procedure it was recovered. We took the patient off the side of the table, let the right side hang down, the head very low, and with some little shaking of the entire body out dropped the bullet with blood clots. This is an easy method of recovering heavy objects that are lost in the pleural cavity.

#### DISCUSSION CLOSED.

**Dr. H. Freudenberg, Grand Junction:** In my opening remarks I stated that bullet wounds were interesting to the surgeon at all times, because they taxed his ingenuity. And so Dr. Freeman, who has used an ingenious device for controlling hemorrhage from the bladder, has applied it to checking profuse hemorrhage in wounds of the liver. I desire to thank the gentlemen for their interesting discussion.

#### SCIENCE VS. SENSATION.

**Try It.**—Bee Master (to pupil who has just brushed off bee which stung him—"Ah! You shouldn't do that; the bee will die now. You should have helped her to extract her sting, which is spirally barbed, by gently turning her round and round.")

Pupil—"All very well for you, but how do I know which way she unscrews?"—Punch.

#### WHAT DO THEY REALLY TELL THE REPORTER.

"A new use of ether as an anesthetic was introduced for the first time in this city yesterday, when physicians at the Hahnemann hospital operated on a patient after they had infused the drug into the blood. . . . The infusion is called 'hydrocele' . . . Dr. Hessler superintended the 'hydrocele.' The operation was successful."—Philadelphia Ledger.

*THE COMPLICATIONS OF TYPHOID  
FEVER AND LATER DAY  
TREATMENT OF SAME  
WITH REPORT OF  
CASE\**

FRANK W. KENNEY, M.D.

While medical men are practically agreed as to the symptomatology and treatment of typhoid fever, there is yet some difference of opinion as to its pathogenesis and etiology. The journal of the American Medical Association, October 16th, 1909, states, "The typhoid bacilli produce their effect through poisons which are set free by bacteriolysis occurring in the blood." Coleman and Buxton (1) Advance the theory that the lymphatic structures of the intestinal wall are the portals of entry, and from here the bacilli reach the general lymphatic system and the spleen, being here protected from the bactericidal power of the blood." After they grown to a sufficient amount they overflow into the blood, where the bacilli undergo bacteriolysis and endotoxins are set free which cause the symptoms of the disease. Coupling this with the theory quite well proven by these some authors in their analysis of the blood in 1602 cases, of typhoid, that typhoid bacilli do not multiply in the blood stream, it seems that we should look upon typhoid fever as a bacteremia only. However this may be, sufficient knowledge has been gained to show that normal human serum is strongly antagonistic to the bacillus of this disease.

The etiology is more complex than formerly thought. We now know that there are different species of bacteria as pointed out by Major Stratham (2) who puts it in this wise "That typhoid fever is in fact a group disease produced by a group of organisms." He also gives a list of five

ing disease in man, indistinguishable from sub-groups of bacteria capable of originating typhoid fever (1st) bacillus fecalis alcaligenes (2) B-typhosus, (3) B-paratyphosus a (4) B-paratyphosus b (5) Bacillus Coli, Larastine (3) has shown by experiment that typhoid bacilli injected into the veins of a rabbit are frequently eliminated by the liver. M. Bellott (4) has found typhoid bacillus most frequently in the bile, less frequently in the intestine, and least often in the colon.

With a recognition of the wonderful migratory character of this bacillus we now accept typhoid fever as a general infection, no part of the body being exempt from its attacks. This knowledge enables us to aid nature in making stronger her defenses, to combat complications, and to treat successfully the various sequelae of this disease.

A young man of 18 years while touring the U. S. arrived in Denver November 16th, 1911 in the fourth week of typhoid. He had been taken ill three weeks previously as he was about to leave his home in N. Y. His desire to prove "game" prevented him from earlier making known to his parents who accompanied him his extreme condition. To disarm their suspicions he forced himself to keep up with the itinerary and partake of the food served to others. Ever increasing weakness and more or less constant vomiting were the principal symptoms noticed by the parents. No attempt at medication had been made. His temperature on arrival was 104, pulse 110. Delirium appeared in a few days soon becoming maracal. The complications were many and severe, the more important of which I will consider briefly.

The hydrotherapy consisted of ice-bags constantly to the head and abdomen for a period of six weeks. Enteroclysis with cold water daily through Kemp's irrigator, and as much water internally as the patient would take, tubbing with friction,

\* Read at the annual meeting of the Colorado State Medical Society, September 25, 26, 27, 1912.

packs, fan-baths etc., with water of varying degrees of temperature as seemed indicated. The list of stimulants included digitalis, strychnine, chaffeine, adrenalin, camphor, atropine, whiskey and spartein. These sedatives Dover powder, bromides, hyosein, chloral and morphine. one per cent, salt sol. was given intravenously and per rectum. Salol or urotropine for the bacilluria. Milk, buttermilk, egg albumin, Mellins-food, milk sugar, by mouth, and dextrose by rectum. Iron in the form of Basham's mixture.

There was only a slight degree of abdominal tympany in the eighth week of the fever. Incontinence of bladder and bowels prevailed during the sixth, seventh and eighth weeks. Acute delirium constant during two months, for the most part maniacal in character.

For the profound toxemia horse serum was first used, with the hope that the bactericidal elements in the blood stream might be increased. No result, however, being manifest, recourse was then had to pneumolytic serum, 40 cc daily in doses of 20 cc each being given. This particular serum was selected, first, because at this juncture there were evidences of pulmonary embarrassment, secondly because of its polyvalent character.

Throughout the fifth and sixth week the temperature ranged from 103 to 105½ axilla, occasionally dropping to 102. During this time the pulse had gone steadily upward till 130 was noted; the increased pulse rate being coincident with myocardial weakness, and continuing at that rate till the serum was begun. Following the first injection of the pneumolytic serum a permanent drop in the temperature took place, it ranging thereafter from 100 to 103, a decrease of two to three degrees being manifest in from 2 to 6 hours after each injection. The pulse also lessened from 130 to 100 and improved in character. The serum was given for six days, then dis-

continued for the same length of time during which interval, while the temperature remained under control the pulse ascended till 145 was reached, when 80 cc of the serum was again given, followed by a drop in the temperature from 101 to 100. The pulse from 145 to 120.

A blood count made at the end of the fifth week showed, reds normal, whites 5000. Polymorphonuclears 64%. Eighteen days later the count showed whites 34,800, polymorphonuclears 86%. During the interval between these two counts pneumonia of the left lower lobe developed, followed quickly by involvement of the right lower and middle lobes. This was shortly followed by double otitis media, the right membrana tympanum rupturing spontaneously before this complication became known, the left being opened by Dr. Levy who saw the case in counsel. Cultures from the ear discharge showed pure culture of pneumococci.

Forty-eight hours after the otitis media had developed the pulse tension became very low, and complete failure of circulation with impending death seeming imminent—1250 cc double normal salt solution at a maintained temperature of 100% F was given intravenously at once, the injection consuming an hour-and-twenty minutes. Forty minutes after the salt was given a mild convulsion occurred, accompanied by loss of pulse cyanosis and dyspnoea, probably due to right heart dilatative, this condition lasting for twenty minutes, disappearing under powerful hypodermatic stimulation. Two hours after the intravenous injection of salt the temperature showed 104 axilla, pulse 140. Six hours later the temperature had dropped steadily to normal and the pulse to 115, the temperature only once thereafter going to 103, the pulse becoming stronger and giving us no further concern.

The diet of typhoid fever during the last few years has undergone many



changes, the pendulum swinging first this way and then that, seemingly however always returning to milk or its modifications as a food possessing the four cardinal elements needed for nutrition. An experience of twenty years with over 200 cases in private practice with a mortality of not more than 1% is my testimony to its worth. Yet we have learned many things in the last few years concerning food values in febrile conditions, and how to appreciate the value to the human economy of certain other foods when especially indicated. With the clinical and chemical aids now in use, with better knowledge of the physiology, pathology, and the chemistry of the human body, we should save life where formerly we lost it.

Acetone appeared in the urine at the end of the fourth week, and three days subsequent albumin and granular casts were found. For the acidosis the administration of carbo-hydrates in the form of Mellin's food and milk sugar by the mouth, and one pint of 15% solution of dextrose, "Murphy method," per rectum each twelve hours were given. The acetone entirely disappeared from the urine in six days, and what may be of interest to the profession to know is, that the albuminuria and casts cleared up simultaneously with the acetone, and neither condition reappeared.

Acid intoxication is due to a change in the oxybutyric acid, to first diacetic acid and then acetone, and found where there is a disturbance of metabolism associated with intestinal disorders in which there is diminished absorption of proteids. A resulting destruction of body tissue coupled with a reduction of carbo-hydrate food, seems to be the most generally accepted cause of acetonuria. Considering acetonuria in relation to wasting disease like typhoid and tuberculosis, it is evident that defective nutrition and tissue waste precede the development of this condition.

In this particular case the patient

weighed in health 150 lbs. His loss in weight was slow for the first three weeks, but was quite rapid during the fifth week, and by the end of the ninth week the patient was extremely emaciated, his weight at that time, estimated, being about 80 to 90 pounds.

Coincident with the appearance of the acidosis, purpuric spots began to appear over the sacral region, also some rectal bleeding occurred while the skin surfaces over the back abdomen and thighs became mottled and bronzed. The blood dyscrasia as evidenced by these symptoms was combated by iron in the form of Basch's mixture, and by Calcium Lactate grains 120 daily in divided doses, continued for three days, then omitted of a day or two, then given as before. The good results from the use of Calcium in previous cases had favorably disposed me to its use though I administer it in larger doses than commonly advised. I do not believe Calcium in 3 to 5 grains doses will accomplish much in these hemie conditions where a quick response is necessary, neither have I realized any benefit to my patients from the use of gelatine and other agents supposed to influence blood coagulation, but which have proved useless in my hands. I believe the Calcium salts in large doses are helpful and reliable. How long one might maintain this dosage with benefit and without possible danger to the patient I am unable to say, though one author has given an opinion that three days is a safe and sufficient length of time for these heroic doses, as after that time the fibrin factors may be redissolved by the further administration of the salt. In this case the petechial spots soon began to fade and no new hemorrhages occurred.

We had four serious complications in this case to deal with at one and the same time i. e. a true double lobar pneumonitis, an acetonuria, acute nephritis and purpura hemorrhagica, and in each one there is in-

creased Calcium excretion and therefore a relatively decreased amount of fibrin ferment. Tasker Howard (5) reminds us that for twenty years it has been known that Calcium is necessary for the formation of fibrin ferment, and quotes Hamburger to the effect that Calcium stimulates the phagocytic activity of the leucocytes, and Mitchell (6) who states that the pneumococci themselves extract Calcium, that the enormous numbers of leucocytes demand Calcium and that a stimulant effect upon the heart is noticed following its use. Howard also calls attention to the well supported theory that a deficiency of Calcium in the serum causes an hyperexcitability of the nervous and muscular systems and quotes Sabbatini (7) to this effect. This was particularly well demonstrated in this case, as there was seemingly never a moment during the protracted delirium covering a period of nine weeks, when there occurred complete muscular relaxation, and this in spite of larger and oft repeated doses of morphine, as much as three grains being given subcu in twenty four hours. Fearing involvement of the central nerve system Dr. Pershing was called in counsel, he however not finding any lesion of the brain and attributing the condition to the toxemia of the disease.

Let me call your attention briefly to a few important facts in connection with this disease. 1st, that the urine in 24% of all cases contains typhoid bacilli of a virulent type and especially about the time the temperature declines toward normal.

2nd, that fat metabolism depends on a proper amount of Calcium in the liver and that when there is a deficiency of Calcium salts acidosis follows.

3rd, that failure of circulation due to low vaso-motor tone is the cause of death in a majority of cases. Salt solution and digitalis should be the chief agents in cardiac stimulation. 4th, that metastatic processes in various parts of the body may

occur years after recovery. 5th, that typhoid bacilli can remain in the body and still retain their virulence for many years. 6th, that no organ of the body is exempt. 7th, that secondary infection with the pyogenic cocci often occurs, and symptoms of such complication be obscured by the primary infection.

It is also true that chronic bacillus carriers are usually women, and that biliary calculi often contain typhoid bacilli. That perforation occurs in 3% of all cases. This condition calls for an early diagnosis.—Severe pain not always present—but there is usually rigidity, a drop in temperature, an increase in leucocytes while peritonitis has begun if vomiting occurs. Early operation will save a large majority of these cases. It is also at times difficult to differentiate between a cholecystitis and appendicitis.

Typhoid vaccine will give immunity to the disease but should not be used as an agent in its treatment inasmuch as it is an antibacterial and not an antitoxin, and therefore has no effect on the toxins. Marked rigidity of the dorsi-lumbar spine may be treated with success by psychotherapy and the cautery.

The history of this case since convalescence was established is of interest. The temperature became normal at the end of ninth week. His delirium disappeared two weeks later. Owing to his extreme emaciation the development of large bedsores, a typhoid spine and contractures of the limbs, he was bed-ridden for five months in addition, and has just now thrown aside his crutches, after a period of eleven months since the inception of his illness. I am satisfied that Salt Solution, Calcium, and the addition of carbohydrate food to the diet was largely instrumental in saving this case, and I would urge the profession in the treatment of typhoid fever to make frequent use of a good sphygmomanometer and daily analyses

of the urine for acetonuria and albuminuria, and prove your clinical findings by blood counts at frequent intervals.

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### TREATMENT OF ACUTE PNEUMONIA\*

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Before taking up the treatment of the disease, let us study for a moment the peculiarities of acute pneumonia which render the affection in general a grave one, and often place it beyond the pale of curability. The first requisite in laying out a campaign is a just appreciation of the object sought and the difficulties of its attainment.

We have long sought a specific treatment for this disease, but thus far we have sought in vain. Even during the years of practice of the older members of this association one new method of treatment after another has arisen, perhaps become widely adopted, and then fallen into more or less complete disuse. The mortality of acute lobar pneumonia from one decade to another in the great hospitals of the world remains practically unchanged, if only the statistics be derived from a sufficiently broad basis to offset the errors due to the occurrence of mild outbreaks of pneumonia in certain seasons. From 10 to 40 per cent of all the cases die, no matter where the study is made, the average for the world being about 20 per cent. Yet, in spite of such overwhelming evidence, we all know

the cheerful practitioner who has practiced forty years and never lost a case! One fairly prominent German clinician once made similar claims. I know of no other disease in the handling of which men of this type exhibit such a preponderance of therapeutic ability over their fellows, if we take their statements as true, or such lack of diagnostic ability and capacity for full and honest reports as to the course of their cases if we accept the more probable alternative. The physician who loses no cases of acute lobar pneumonia either sees but few of them, is singularly lacking in observing power and disposition to give out the exact, uncolored results of his experience, or he is possessed of supernatural attributes which place him out of the class of medical men with whom I have been at work for a generation.

Let us study the reasons underlying the rather gloomy statements we have made. In malaria, syphilis and diphtheria, for example, we have specific remedies, which, in some instances, practically eliminate the mortality of the disease. Pneumonia is an acute so-called specific disease. Why do we not have greater success in its treatment.

In the first place, pneumonia, as we know it clinically, is an exudative inflammation of the lungs, often due to the pneumococcus, but often also to Friedlander's organism, to the streptococcus, to the plague bacillus, staphylococcus, typhoid bacillus, etc., and frequently to a mixed infection. At the outset these various infections cannot be distinguished clinically. Every teacher of extensive clinical experience has perhaps shown as typical acute pneumonia either a typhoidal lung involvement or an acute tuberculous pneumonia and has become aware of the error only upon the failure of the disease to continue along the course common to the supposed acute lobar pneumonia. Both infections are, in fact, pneumonias, in the sense that they involve the presence of an acute exudative lung dis-

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ease, but the causative organism and course were different in each.

Further study will convince any fair-minded physician that the relative increase in the mortality from pneumonia, while tuberculosis, typhoid, diphtheria, smallpox and most of the infectious diseases show a lessened morbidity and mortality than formerly, has a perfectly valid explanation. The latter-mentioned affections are all those of youth and the earlier years of adult age, while pneumonia is the final affliction in the case of thousands who have been saved from death in infancy by the pure-milk erasades, from diphtheria by the introduction of antitoxin, from typhoid and smallpox by vaccination and from other diseases by improved hygienic conditions, better therapeutics, by aseptic surgery, etc. All patients saved from death yet await the Grim Reaper in some other form. The frequency with which pneumonia constitutes the final scene may be best appreciated by a contemplation of the fact that over half of all deaths in those over 70 years of age are due to it. These people, in our present conditions, must all die eventually, and there is little reason to think that therapeutic endeavor will do more in this field than delay the advent of the final infection.

Because of the biological and cultural peculiarities of the pneumococcus and the varied character of the bacillary infection we have less reason to hope for a specific remedy along the lines of sera and antitoxins than in the more narrowly specific diseases. A fairly extensive opportunity for study of the effect of many proposed remedies of this type, in the hands of many different physicians, has failed to convince me of any especial virtue in them.

Recognizing then, the varied character of the infection in different cases; the more or less hopeless outlook in many senile cases; the fact that chronic disease, especially of the heart, liver and kidneys, is often present, and that so far specific rem-

edies have not demonstrated their efficacy, let us consider what can be done in the average case of lobar pneumonia.

The possibly somewhat pessimistic views expressed above as to certain features of the disease and its treatment do not at all signify that treatment by such means as we have is not effective in bringing about a great reduction in the mortality rate, as compared with what this rate would be without the assistance of the skilled physician. Without a just appreciation of how much medicine can do, and of the conditions in which therapy is powerless, the physician finds himself in hopeless confusion. We shall say little of prophylaxis here, excepting that avoidance of exposure to cold and of undue fatigue, with the use of antiseptics in the mouth are to be commended.

With the initial chill, commonly accompanied by pain in the side and painful cough, the patient should be placed in bed and hot drinks administered, preferably with an alcoholic, since the action of the latter upon the peripheral vessels gives much relief to the chilly sensations.

The use of morphine hypodermically at this time is indicated if the chill be severe, but more especially for the sharp pain often present.

As soon as the diagnosis is reasonably assured the patient should be placed in the most thoroughly ventilated room that is available, or better still, upon a porch. Nothing thus far has had so pronounced and favorable an effect upon the course of the disease as the more or less general introduction of this method of obtaining the stimulating effects of fresh, cold air upon the cardiac and respiratory systems. The fear of the patient's "taking cold" may be dismissed without consideration. The danger to the attendants, if not careful to clothe themselves suitably, is much more to be feared.

If the cough becomes severe, the irrita-

tion of the inflamed layers of pleura commonly causes so much pain and dyspnoea, the latter because of the difficulty of full expansion of the chest, that some sedative must be used, commonly codein, heroin or morphine as may be necessary. I have seen the respiratory rate drop more than twenty in the minute by the relief of the pain and suppression of unnecessary cough. On the other hand the sedative should be given on p. r. n. orders that no more shall be used than is actually necessary.

The inactive bowels commonly demand only ordinary attention, after being first thoroughly evacuated. There is so little food taken for the first day that further laxatives are scarcely indicated until food is taken more freely.

Applications to the chest formerly played an important part in the treatment of pneumonia. The comfort temporarily derived from the jacket poultice in some cases certainly does not compensate for the exhaustion of the patient by the need of frequent changes and of moving a weight of several pounds with every respiratory effort. The common adoption of woolen underclothing or of the cotton jacket, with some stimulating liniment, especially containing camphor or turpentine, and the further use locally and temporarily of sinapisms if pain demands, seems to me to cover all the requirements of the case properly.

Nourishment will scarcely be taken during the exudative stage. As soon as the patient can take it, the use of any desired liquid foods is to be commended. Frequently iced milk and buttermilk are best taken. If abdominal distention, with crowding upward of the diaphragm and consequent interference with respiration, ensue, it is best to give a laxative and to change at least for a day to broths, soups and albumin water. Tea and coffee may be used safely, and cocoa, chocolate and

ice-cream are in order. As soon as returning appetite permits, soft foods are permissible but with care not to cause abdominal fermentation and distention by the too free use of cereals and other starchy foods. The tight cough of the early days of acute pneumonia has often led to the giving of expectorants at a time when they can probably do no good, and when they tend to upset the stomach. As soon as any sign of softening of the exudate appears, if expectoration be not fairly easy and complete, the ammonia preparations may be used. The aromatic spirits is so much more easily taken than other preparations that it is used more and more of late years. The stimulating effect upon the heart may be desirable. In the septic type of cases I think I have observed much benefit from the use of 15 drop doses of creosotal every two or three hours. The carbonate of guaiacol in 5 grain doses in capsules may be substituted if the former is not well borne.

In rare cases the filling up of the bronchi by a thin exudate, with abundant moist rales, great dyspnoea and cyanosis, justifies the use of one or two doses hypodermatically of atropine. I have even seen almost instant relief with recovery, in such cases. Evidently the patient was kept from drowning just long enough for the crisis to arrive.

The greatest battle amongst the therapeutists concerns cardiac stimulation. If the pulse remain of good quality and less than one hundred in frequency, stimulants are probably best withheld. If failure occurs, as shown by increased frequency, lack of volume, slow peripheral circulation, cyanosis under the nails, and commonly some dilatation of the heart, often with accentuation of the pulmonic second sound, owing to the increased resistance in the lung, strychnine is indicated. Digitalis has been much abused in pneumonia, but is called for if the improvement sought

does not appear upon the administration of the strychnine. Personally, I have seen more benefit from these two drugs than from all others combined. In spite of the bitter controversy concerning alcoholics, the great majority of physicians still use whiskey, or if better borne, champagne, when the embarrassed circulation demands further help. Observation as to its effects must be the only guide as to the dosage, and the continuance of this form of stimulation must be justified by better pulse, less restlessness and general improvement. As the disease progresses the need for opiates for pain and cough is likely to become less urgent. They should be given with greater circumspection, and preferably not for restlessness or lack of sleep alone. Alcohol is frequently of service for these symptoms. Only the milder hypnotics are admissible. In chronic alcoholics the danger of delirium tremens is probably distinctly lessened by the use of moderate alcoholic stimulants from the start.

For the high temperature of pneumonia, cold bathing is indicated, but not with the same force as in typhoid and other longer-continued fevers, where degenerative changes in the heart muscle are more to be feared. Cold sponging, with care not to disturb the patient seriously is applicable rather than the more radical measures. Cold compresses are extensively used. The use of veratrum, aconite, free blood-letting, emetics, calomel, iodides and immense doses of digitalis and of anti-pyretics is no longer countenanced. In certain cases a hypodermic dose of 15 grains of quinine has seemed to be of value, but the continued use of large doses has not proven to be the absolute cure that certain enthusiasts have claimed for it.

Because of the value of elimination of toxic products through the urine and the tendency of the secretion to become very scanty, the free use of water, and especially of lemonade or of the diuretic salts

of potash is to be recommended. The common use of the liquor ammonii acetatis is commendable because of its eliminative antithermic actions. The use of saline infusions by the rectum is to be commended, but with care not to embarrass the heart and kidneys by requiring the movement of too large a mass of fluid. When the circulation becomes embarrassed to the extent that dilation of the heart, prominence of the superficial veins, cyanosis, dyspnoea and restlessness are notable, the abstraction of 12 or 16 ounces of blood occasionally works almost miraculously. The procedure is probably less used than it should be.

Oxygen seems to be of more value theoretically than practically, but is of some service in a limited number of cases.

At the time of the crisis especial care should be used that collapse does not follow. I have seen a drop of 10 degrees F. at this time place the patient in extreme danger in a few hours. Stimulation should be freely employed if called for.

Persistent pleuritic pain calls for the application of the ice bag, the use of opiates if necessary and watchfulness as to the development of empyema. The early and repeated use of the aspirating needle is to be commended if effusion is suspected.

Unresolved pneumonia is much less common than formerly believed. Empyema is so commonly at the basis of the suspected non-resolution that only the most positive evidence excludes it. General tonic measures, much as in pulmonary tuberculosis, with the use of potassium iodide, are to be employed.

Pericarditis is a serious and fatal complication. If it develops in a case of pneumonia involving the whole left lung, a fatal result may be looked for, although I have had one recovery under such circumstances. The ice bag and the free use of digitalis are probably most efficacious.



with opiates for the pain. Dry cups, as in the case of pleural inflammation, are used by many practitioners.

I have known many patients with the delirium of acute pneumonia and especially with the alcoholic type, to escape from the room when not watched and restrained. The need of especial care should be mentioned. Less harm has come from such escapades than I should have anticipated.

For the pneumococcic septicemia and the virulent meningitis, often with extreme fever, we can add but little in the way of treatment to what has been said as to pneumonia. Urotropin may be of value.

The most serious handicap for the patient perhaps lies in the existence of a well-marked mitral stenosis. Death may result within the first thirty-six hours even. I have seen but one recovery under these conditions.

The frequent jaundice in association with pneumonia of the lower right lobe is of interest, but requires no especial modification of the treatment.

In conclusion we may state that, although we cannot hope to save all cases of acute pneumonia, there is the utmost need for good nursing, careful observation, judicious feeding, prescription of drugs upon definite indications only, extreme watchfulness for development of new areas of infection and of complications and an enlightened conservatism in regard to new measures in treatment.

#### **SOME PEOPLE ARE CARRIED AWAY WITH THEM, HOWEVER.**

Dr. Clyde F. Horner, Tiskilwa, Ill., relates the following incident which occurred in his practice:

In his absence another physician was called but on his return he was asked to take charge of the case. It was the lady of the house who was sick, and she said to the doctor:

"I do not think the auto has anything to do with my sickness, do you, doctor?"

"Why, no," he replied; "why?"

"Well, I knew Dr. \_\_\_\_\_ did not understand my case, for he said I had auto-intoxication."

#### ***SURGICAL COMPLICATIONS OF LOBAR PNEUMONIA AND THEIR TREATMENT\****

C. N. NEEDHAM, M. D.,  
GRAND JUNCTION, COLO.

The surgical complication of lobar pneumonia covers a very large field, the methods and technique in treating these pathological conditions vary greatly with each individual operator and with each individual case.

The most frequent complications of lobar pneumonia is empyema, abscesses next in frequency, gangrene of the lung occasionally, gangrene of the extremities rarely.

**Empyema.** Treatment: Experience shows that occasionally in adults and frequently in children, aspiration of an empyema, if repeated two or three times with the interval of a week is followed by a cure. The injection of two per cent. formalin in glycerine has met with good results. The more quickly a cure can be effected the better it will be for the lung and considering the frequency with which it is not successful, aspiration is not recommended except in certain selected cases or in double empyema.

**Treatment of Unilateral Empyema.** Open and drain the cavity as soon as the pus is positively established. In all empyemas it is advisable to aspirate before making the incision. The operation of choice is thoracotomy. The most favorable position to select for the incision is a posterior opening with a removal of a portion of one or more ribs at the lowest part of the cavity. Adequate drainage by the use of drainage tubes or by the use of Wilson's double flanged empyema tube. To the drainage tube may be attached a collapsible rubber bulb to the outer end, the drainage tube reaching to the

\* Read at the annual meeting of the Colorado State Medical Society, September 25, 26, 27, 1912.

bottom of the cavity and should accurately fit the opening in the chest wall. Near its attachment to the bulb a stop cock is fitted which permits the removal and emptying of the bulb without admitting air into the chest

In many cases recovery may be accomplished by a lateral incision, the spaces being sufficiently wide to make resection unnecessary. Sometimes the patient is in so bad a state that the length of time of the operation is a drawback and in very septic cases the risk of secondary hemorrhage is increased, but in a vast majority of cases the length of time is of no consequence. The large opening enables the surgeon to explore the pleural cavity and open up outlying pockets. In very septic cases the risk of secondary hemorrhage can be minimized by tying the intercostal artery in two places and dividing between sutures.

After operation if the lung does not expand, it is advisable to have the patient increase the intratracheal pressure by blowing one of two connected Wolff's bottles. Another method of diminishing the time of closure of an empyema is by the use of a tightly-fitted India rubber box attached to the patient's side in which the air is exhausted to the desired amount and in which some arrangement is made for the reception of the discharge.

Double Empyema. Both sides of the chest have been opened up at the same time without any bad results, but it is not to be recommended on account of the uncertainty as to the presence of adhesions. No doubt adhesions are usually present on both sides and thus the double incision would be safe. The best and safest method would be to open one side freely and aspirate the other and after a time when the patient is accustomed to the altered respiratory conditions, and the pus continues to accumulate in the unopened side, the lung on the other side doing some work, then open the second pleural cavity and drain it.

Chronic Empyema. There are several reasons why an empyema may become chronic and which must modify opinion as to the advisability and nature of treatment.

If the opening be too small or badly placed, pus will be retained in the cavity. If the opening be well placed but too small, it should be enlarged by removing part of another rib. If it be badly placed a second opening must be made in a more favorable position. This may be determined by introducing the finger to the lowest part of the cavity. If the cavity be too large to close by natural processes or the complete collapse of the lung before any pleural adhesions have been formed, the desired results may be obtained by resecting the ribs to the size of the cavity, allowing the chest walls to collapse, *Thoracoplasty*. This procedure varies with the size and extent of the cavity. The shape and size of the cavity are first ascertained with the finger or probe, then the position of incision is so planned as to afford easy access to the ribs to be removed. Also it should be devised so as to avoid dividing transversely muscles.

The incision may be curved or angular; sometimes two incisions are preferable to one. The exposure of the ribs should be made quickly because the operation is often a severe one. The ribs should be removed in the usual way, i. e., after separating the periosteum, because the periosteum is more easily and rapidly taken away afterwards with the thickened pleura with which it has been incorporated. It is not essential to finish the operation on one occasion. In bad cases it is a good plan to perform the operation in two or more stages, allowing some weeks or months to elapse between them.

To prevent the collapse and cirrhotic condition of the lung at the time of the primary operation, it is advised by some operators that the opening into the chest wall be made sufficiently large to intro-

duce one or more fingers into the pleural cavity. After the pus has drained away the anesthetic is suspended and the entire lung is separated from the chest wall. This manipulation causes the patient to cough violently, which increases the intratracheal pressure causing an immediate expansion of the lung.

**Abscesses:** The treatment of abscesses of the lung should be the same as for abscesses in any other tissue. Free incision and drainage early give the best results. As soon as the diagnosis is made and the focus is localized, an opening should be made in the chest wall by the resection of one or more ribs. If the lung is adherent to the parietal pleura, a needle or probe director is thrust into the center of the indurated mass, as soon as the pus is reached the opening is enlarged by dressing forceps or finger and drainage by means of rubber tubing or gauze packing. If adhesions have not been formed between the lung and parietal pleura and the pleural cavity is free from infection, an attempt should be made to create adhesions before opening the abscess. Keen's method has been very successful. A rectangular flap is made by one incision from five to six cm. long in the axis of one rib and two short incisions at each end. This exposes one or two intercostal spaces. By light touches of the knife the intercostal muscles are gradually divided and pushed up and down until the parietal pleura is reached. To produce adhesions, pack the wound for three or four days with iodoform gauze and stitch the flap in place by a few temporary sutures.

It is a disputed question as to the advisability of establishing external drainage in abscesses which have ruptured into a bronchus. The delay in healing in these cases is usually due to adhesions which prevent the collapse of the lung and cicatrization of the cavity. Murphy advises thoracotomy and separation of pleural adhe-

sions, or where no adhesions are present, the production of an artificial pneumothorax by the introduction into the pleural cavity of sterile nitrogen gas. Murphy's method of determining whether there are adhesions or not before operation: A hypodermic needle is introduced over the supposed site of the abscess, and when the point is imbedded in the intercostal muscle a rubber tube is attached which connects with a reservoir of sterile nitrogen gas; the needle is then pushed slowly inward. When the needle enters the pleural cavity the gas will pass rapidly through it and produce an artificial pneumothorax. If adhesions are present no gas will pass through the needle. The presence of a localized area of cutaneous oedema over a supposed lung abscess also indicate adhesions.

The danger of operations involving the pleura when operating for empyema or abscesses is from the production of a pneumothorax. Numerous devices have been advised to obviate this difficulty, such as the production of adhesions, by suture, canterry or caustics; even this does not permit the exploration of the pleural cavity itself.

In the last four or five years a new method of operating was suggested by Sauerbruch. The principle is the placing of the patient's body in a chamber in which the atmospheric pressure can be lowered to any degree that may be required. In 1905 Braner advanced the high pressure method. The possibility of preventing the collapse of the lung by increasing the pressure inside the lung instead of diminishing it outside.

#### GANGRENE OF THE LUNG.

**Treatment**—Operative treatment is contra-indicated in diffuse gangrene bilateral or multiple areas of gangrene. In the circumscribed form the treatment should be surgical, by a resection of one or more ribs and draining. Again, as in the abscesses of the lung, if the affected area is not ad-



herent to the parietal pleura, measures should be taken to form adhesions before the focus is opened. According to Keene, this may be done by first placing a gauze pad over the external surface of the parietal pleura, then suturing the parietal to the visceral layer, using round curved needle with plain catgut, and subsequently the incision is made through the gauze pad.

#### GANGRENE OF THE EXTREMITIES.

A. N. McGregor, in the *Glasgow Medical Journal*, August, 1908, reports a case of gangrene of the fingers following acute lobar pneumonia which he attributes to thrombosis occasioned by local arteritis from the action of pneumococci in the blood. Amputation was performed with success. From a review of the subject he concludes that the following factors in pneumonia may determine gangrene of the extremities:

First—The blood containing pneumococci, probably in all cases, and with a marked agglutinating power, which increases up to the crisis and then gradually diminishes.

Second—The weakness due to the acute fever, and in particular the earlier stages of pneumonia, sometimes resulting in the formation of clots or vegetations, which passing into the arterial circulation becomes emboli.

Third—The invasion of the veins by pneumococci, causing phlebitis and thrombosis, sometimes followed by pulmonary embolism.

Fourth—A probable similar invasion of the intima of the arteries, resulting in arterial thrombosis.

Fifth—Thrombosis of arteries following embolism where the clot formation extends to some distance and shuts off the collateral circulation.

Pneumococci thrombosis occurs chiefly in the lower extremities and recovery is more frequent from venous obstruction than from arterial. The complication is rare. Amputation should be made after the line of demarcation is well formed.

#### DISCUSSION OPENED.

**Clay E. Giffin, Boulder:** Dr. Needham's paper has been most excellent. These empyema cases especially interest me. I speak chiefly of the subacute and chronic empyemas of adults. The general practitioner sees them first and often it falls to his lot to see them last, through a long course of dressing first after a puncture, then after a rib resection and then possibly after an Estlander.

In view of the discouraging chronicity and high mortality in empyema a method recently published by Dr. Murphy is worthy of notice. A small amount of pus is withdrawn through a large aspirating needle, then through the same needle about 15 cc. of two per cent. formalin in glycerine is injected into the pleural cavity. This process should be repeated every few days until the pleural content alters from purulent to serous, in which state it may be absorbed gradually. As absorption takes place lung expansion gradually ensues and the result is that the dreaded dead space never occurs. The method is surely worthy of extensive trial.

#### DISCUSSION CLOSED.

**Charles N. Needham, Grand Junction:** I think the reason we have this long period of drainage is because the opening is too small or badly placed in a majority of the cases. If pus be retained in the cavity the drainage period will be longer. We all have the same difficulty in finding the right place for the incision. The two per cent. formaldehyde in glycerine gives better results in children than in adults.

### THE TREATMENT OF GUNSHOT WOUNDS OF THE CHEST\*

A. L. BURNETT, Ph.G., M.D.  
SILVERTON, COLORADO.

The present age has made tremendous advances in medicine and surgery. Why not in the treatment of gunshot wounds of the chest? The statistics of military surgery, covering the last one-half century, show us a great reduction in the mortality of this class of injuries. American Civil War, United States troops, 62.6 per cent; Spanish-American War, United States regulars, 24.5 per cent; Boer War, British, 14 per cent, a reduction of 48.6 per cent. This reduction is mostly due to the evolu-

\* Read at the annual meeting of the Colorado State Medical Society, September 25, 26, 27, 1912.

tion of the military rifle and missile. In civil practice the conditions are different and the change in the wound is not so apparent.

Before the New York State Medical Society, in 1887, Dr. Roswell Park said that he hoped to see the time when thoracotomy and thoracoplasty could be done safely in the treatment of surgical conditions of the chest. We are still living in that hope, and the most of us are treating gunshot wounds of the chest today as did our forefathers in medicine, but through the work of Auer and Meltzer in intratracheal insufflation anaesthesia, I believe we are entering a new era in thoracic surgery, wherein we may open the thoracic cavity with impunity and repair the injured structures therein.

Gunshot wounds of the chest are infrequent in civil practice and form a very small portion of the hospital surgery in most communities, but they are a class of cases wherein the results are most uncertain, for in perforative gunshot wounds of the chest we hope there is no infection—but it is only a hope.

#### DIAGNOSIS.

Gunshot wounds of the chest may be divided into perforating and nonperforating.

Perforative wounds of the mediastinal region are usually immediately fatal. (See Cases No. 5, 7.)

The position of the entrance and exit wounds will give some idea as to injury of the heart, pericardium or other important structures.

The symptoms of penetration in order of frequency are: Hemoptysis, dyspnea, pain, collapse and shock, severe cough, friction sounds and deficient chest movement. Hemoptysis is present in about 65 per cent of cases, dyspnea is usually present, while pain, collapse and shock, with severe coughing, occur in over three-fourths of all cases, and in practically all cases of pistol-

shot wounds of the chest with .38 caliber or larger lead bullets.

External hemorrhage is very rare, while intrapleural hemorrhage commonly produces hemothorax, and in wounds from large caliber bullets pneumo-thorax and hemo-pneumo-thorax is frequently present.

Non-perforating gunshot wounds of the chest produce no symptoms other than wound of the skin, outer layer of muscles of the chest wall and sometimes fracture of a rib, the latter rare but difficult sometimes to differentiate from penetration, especially in .22 or .32-caliber bullet wounds.

#### COMPLICATIONS.

Complications which may occur are: Empyema, from infection of the wound in the pleura direct, or from infection of the wound or hemo-thorax from the perforated lung.

Pleurisy occurs to a limited extent in all cases, while abscess of the lung may form around foreign bodies lodged in the lung tissues at the time of injury, i. e., pieces of bone from fractured rib or sternum, small pieces of clothing or lodging of bullet in lung tissue, which very seldom occurs.

Recurrence of tuberculosis, if the bullet passes through healed tubercular areas, thence through normal lung tissue. (See Case 6.)

#### CASES.

Case 1. A. B., Austrian, age 36, July 6, 1905, was wounded by a .32-caliber pistol bullet; entrance between fourth and fifth ribs in right anterior axillary line; course of bullet backwards, downwards and inwards, lodged beneath the skin one and one-half inches to right of spine, between the seventh and eighth ribs, non-penetrating; patient presented no symptoms other than external wound; made uneventful recovery.

Case 2. M. M., American, age 45, November 20, 1906, was wounded by a .38-

caliber pistol bullet; entrance left posterior axillary line, eighth rib; course, forward, upward and to the right; exit, right third rib, mid-axillary line, entered right arm two inches below shoulder joint, shattered right humerus.

Symptoms: Hemoptysis, dyspnea, collapse and shock, severe pain and coughing, symptoms of hemorrhage; death two and one-half hours.

#### POST-MORTEM.

Bullet wound left eighth rib, posterior axillary line, eighth rib fractured at point of entrance, fresh bullet wound through left lung, mediastinum posterior to heart, and right lung to point of exit, third right rib mid-axillary line, bullet wound, inner side right arm, two inches below shoulder joint, right humerus shattered and flattened lead bullet in the shattered bone.

Pleura—Left pleural sac contained about one and a half pints of blood, eighth left intercostal artery severed, right pleural sac contained small amount of blood pneumothorax.

Mediastinum contained extravasated blood; no important structures injured.

Cause of Death—Hemorrhage with collapse of right lung.

#### CASE 3.

M. G., Mexican, age 26, November 28, 1906, was wounded by a .38-caliber pistol bullet; entrance, between right fifth and sixth ribs, mid-clavicular line, anterior; course, backwards, downwards and inwards, perforating right lung; exit, none; bullet lodged beneath the skin, between the eighth and ninth ribs, one inch to right of the spinal column.

Symptoms present: Hemoptysis, dyspnea, coughing and severe pain.

Chest injuries healed promptly and patient made uneventful recovery.

#### CASE 4.

J. B., American, age 42, December 12, 1906, was wounded by a .32-caliber pistol bullet; entrance, between first and second

ribs anteriorly, left mid-clavicular line; course posteriorly through apex of left lung; exit, inner margin of scapula, on a level with the spine of the scapula.

Symptoms present: Slight hemoptysis, very little coughing or pain.

External wound healed promptly; recovery in ten days.

#### CASE 5.

M. L., Irish, age 37, December 24, 1906, was wounded by a .38-caliber pistol bullet; entrance, fourth intercostal space, left mid-clavicular line; exit, seventh rib, one inch to left of spinal column. Death immediate.

Post-mortem—About two inches to left of the margin of the sternum, in the fourth intercostal space is a bullet wound. Bullet passed through pericardium, left ventricle of heart, left lung and fractured seventh rib at point of exit. Pericardium tightly distended with blood, heart in systole, revealing the tamponade of Dr. E. Rose.

#### CASE 6.

M. A., American, age 30, June 21, 1911, was wounded by .32-caliber rifle bullet; entrance, mesosternum at the level of the third intercostal space; exit, seventh right intercostal space in mid-axillary line; course, posterior, downwards and outwards, perforating right lung, fractured seventh rib one inch in front of exit.

Symptoms present: Hemotysis, dyspnea, shock, cough and pain. External wounds healed primarily; fourteen days after receiving wound, patient developed a pericarditis and died two weeks later, or twenty-eight days after being wounded.

Post-mortem—About one-fourth of an inch to right of sternum upper margin of fourth rib is a bullet wound, pericardium adherent to sternum at the level of the third and fourth ribs, and universally to pleura about it, left wall greatly thickened and emphysematous, the pericardial sac is greatly distended and contains several ounces of purulent material. Lungs: Right densely adherent to chest wall, to pleura, diaphragm



and pericardium, in the upper lobe is a large healed tubercular cavity, running downward and outward from the level of the fourth rib one inch to right of sternum to the seventh intercostal space in the mid-axillary line of the right side is the bullet tract. This is well defined and walled off from the surrounding lung, and healed. It passes through a healed tubercular area, beyond which are scattered new tubercules in the bullet tract. The seventh rib is fractured one inch in front of the bullet exit.

Cause of Death—Acute purulent pericarditis. This was an infection which did not develop for a couple of weeks after the shooting.

#### CASE 7.

U. A., American, age 28, July 2, 1912, was wounded by a .44-caliber pistol bullet; entrance, mesosternum, level of third rib; course, posterior and slightly outwards; exit, posterior, right sixth intercostal space at inner margin of scapula. Patient talked after being wounded; death in a few minutes.

Post-mortem—About the median line on a level with the third costal cartilage is a large bullet wound, mesosternum fractured. Pericardium, upper right margin contains lacerated wound, pericardial sac contains about two ounces of bloody fluid and a small piece of bone from the mesosternum. Heart is in systole, media-stinum emphysematous and contains extravasated blood; upper branch of right bronchi torn in half. Lungs: Right collapsed, contains wound running posteriorly to point of exit, the bullet tract contains clotted blood and a few pieces of splintered bone from the mesosternum. Left lung: Blood in bronchi and bronchioles. Pleura: Left normal; right contains lacerated wounds anteriorly and posteriorly at points of entrance and exit of bullet. Right pleural cavity contains about one and one-half pints of blood and considerable air.

Cause of Death—Hemorrhage and shock.

Cases 2, 5 and 7 fatal, result from shock and hemorrhage; Case 6, fatal result from delayed infection; Case 1, non-penetrating. From the seven cases here presented, though they are not numerous enough to draw conclusions, we are at once impressed with the fact that while the modern military rifle has reduced the mortality on the battlefield, the gunshot wounds of the chest today in civil practice still takes a death toll above 55 per cent. These facts point clearly to the seriousness of gunshot wounds of the chest and that undoubtedly in this class of injuries we have a condition that calls for more extraordinary care and painstaking than other injuries of apparent greater severity to prevent a serious or fatal result.

#### TREATMENT.

The indications for treatment are four-fold:

First—To prevent infection.

Second—To check hemorrhage and combat shock.

Third—To secure as nearly as possible complete rest of the chest walls.

Fourth—To be on the guard for and treat all complications.

The first indication is met by promptly cleaning the wounds of entrance and exit with alcohol, followed by tincture of iodine and applying a sterile dry dressing hermetically sealed with collodion, or a square of adhesive. Never explore the wound with instrument or probe, as they constitute in recent cases a "*noli me tangere*" in surgery.

To meet the second indication, keep the patient quiet in a recumbent position, strap or bandage the chest tightly, apply ice bag to chest and the hypodermic administration of one-fourth to one-half grain of morphine sulphate, thence transfer the patient, preferably on a hand litter, to the nearest hospital, where hemorrhage may be treated by direct operative procedures.

The hemorrhage occurs from three sources, namely:

Intercostal artery, internal mammary artery and branches of the pulmonary arteries or veins, and we may add the heart and large vessels of the mediastinum; the latter are immediately fatal.

The intercostal artery can very easily be exposed, clamped and ligated without opening the pleural cavity.

The internal mammary artery being located near the sternum, between the costal cartilages and the pleura, is in a position wherein it is difficult to ligate without opening the pleural cavity. Use a large external wound over the costal cartilage of the next rib above the point of injury, cut away one inch of the cartilage and secure artery with a fine stitch of chromic catgut.

The third source of hemorrhage can be met only by direct operative treatment of the visceral wounds, yet the question of indications for thoracotomy in this class of injuries is one upon which surgeons have not been able to agree, but with the excellent work of Dr. S. Robinson in perfecting a portable intratracheal insufflation and positive pressure anaesthesia apparatus, I believe it is a matter of only a few years until all hospitals will be fitted out for thoracic surgery, and that all cases of gunshot wounds of the chest producing visceral injury symptoms will be promptly explored. The object in enlarging the wound is not so much for the possible suturing of a wound in the lung as it is to obtain positive knowledge as to the presence or absence of wounds of the pericardium, diaphragm or heart, wounds which are most serious and a diagnosis of the condition is essential while there is yet time for surgical treatment, a most rigid aseptic technic is imperative, owing to the susceptibility of the pleura to infection.

Third—To secure as nearly as possible complete rest of the chest walls, this indi-

cation is met by taking long strips of adhesive plaster two and a half or three inches wide, beginning at the lower border of the ribs, wind about the chest tightly from below upwards until the whole chest and shoulders are enveloped. Two or three layers may be applied with advantage, or by the application of a plaster of paris cast, enveloping the entire chest and shoulders, and the hypodermic administration of morphine sulphate in one-fourth to one-half grain doses to relieve pain, allay coughing and diminish the respiratory movements.

Fourth—To be on the guard for and treat complications. Empyema as early as recognized should be promptly drained by the resection of a rib, before the walls become so greatly thickened and thereby necessitating the more extensive Schede or Estlander operation, while hemo-thorax, if not opened immediately should not be aspirated until the blood serum has had time to separate, which is about the fifth or sixth day. Secondary hemorrhage may occur after aspiration, and abscess of the lung, though rare, as early as recognized should be drained.

#### CONCLUSIONS.

Though thoracic surgery has received a marked impetus in the past two years, we have made but very little progress in the treatment of gunshot wounds of the chest and that wounds from the same class of firearms and missile is attended by about the same mortality today as one-half century ago.

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## Constituent Societies

### MONTROSE COUNTY.

The Montrose County Medical Society met May 8th at the office of Drs. Allen and Schermerhorn. There were in attendance President C. G. Brethouwer, A. W. Knott, I. Knott, F. Schermerhorn and Secretary J. Q. Allen.

The fee list was discussed. Dr. D. C. Groves of Olathe was received into membership. Dr. J. Q. Allen read a paper on "Rupture of the Heart," exhibiting a specimen. The discussion of the paper, in which all joined, was led by Dr. A. W. Knott. Dr. Schermerhorn reported two cases that had come under his observation.

An evening of general good-fellowship was enjoyed by all present.

J. Q. ALLEN,  
Secretary and Treasurer.

## News Notes

Dr. Lorenzo B. Lockard attended the American Laryngological Association in Washington, D. C., in May. He rested a while in Atlantic City, exercised a little on the board walk and then attended clinics in New York and Philadelphia.

Dr. R. F. Darnell, formerly located at Woodcroft, Pueblo, is now alienist to the State Hospital of Arkansas, at Little Rock.

At the election held in Denver on May 20, Dr. J. M. Perkins was elected commissioner of social welfare. At the first meeting of the new commissioners he was chosen president of the body, with title of mayor.

Dr. Clarence M. Hall, who has been assisting Dr. Leonard Freeman, has accepted the post of chief resident physician at the Hospital of the City and County of Denver.

Dr. Alexander C. Craig and Miss Helen Davidson were married June 2. The happy couple has gone on an extensive trip through Europe.

The wedding of Dr. A. J. Campbell and Miss Lucile Arthur is announced to occur on June 23.

Dr. James C. Todd has been elected president of the Scientific Society of the University of Colorado.

Dr. Charles A. Powers has been chosen a member of the executive committee of the National Anti-cancer Association.

Dr. J. W. Craig, Ault, has had a severe attack of ophthalmia, having been infected while attending a child.

Dr. H. Freudenberg has left his practice in Grand Junction to accept a position with the Park Davis company.

The physicians of Aspen recently met with the city council to devise plans for the suppression of an epidemic of scarlet fever that was gaining serious extent in the city.

Dr. J. N. Hall attended the recent Congress of Physicians and Surgeons at Washington, D. C., and on his return he gave an address upon the "Complications of Gastric Ulcer," by invi-

tation before the Academy of Medicine of Buffalo, N. Y.

The travel study tour of American physicians to the XVIIth International Congress of Medicine will sail from New York on July 3rd, on the North German Lloyd steamship "Bremen." About seventy-five physicians will participate in this tour, the chairman of which is Dr. W. B. De Garmo, New York city, Secretary Dr. Richard Kovacs, 236 East 69th street, New York. In co-operation with the international committee for postgraduate medical education, arrangements have been made to visit clinics and hospitals at Paris, Munich, Vienna, Dresden, Berlin, Cologne, Brussels, etc., and inspect the health resorts of Carlsbad, Marienbad, Nauheim, Homburg, Wiesbaden. No American party ever enjoyed similar privileges. The party will finally attend the International Congress of Medicine, August 6th to 12th, in London.

At the annual banquet of the Pueblo County Medical Society held last evening at the Vail, Dr. Crum Epler officiated as toastmaster. Covers were laid for thirty-five, and a most delectable eight-course menu was served. The paper of the evening was read by Dr. W. W. King of Cripple Creek, his subject being, "Pneumonia in High Altitude." The discussion was general, among the prominent leaders being Drs. Frederick Singer, J. A. Black, J. J. Pattee, Crum Epler, T. A. Stoddard, A. T. King, F. E. Wallace and J. E. Peairs. The regrets of several members of the society were read, and the toastmaster announced that it was imperative that every member of the society be present at the meeting on the evening of May 20, as business of importance would come up.

## Book Reviews

**Medical Men and the Law.** By Hugh Emmett Culbertson. Octavo, 325 pages, cloth; \$3 net. Philadelphia and New York. Lea & Febiger, 1913.

This unique work touches the personal interests of every physician and surgeon, and also of every practitioner in any branch of healing. It deals with the duties, rights and liabilities of the professional man toward the public as settled by law, and also the legal relations of the regular profession to practitioners of the many schools of healing now in vogue, as well as the status of such healers in the eye of the law. It behooves every medical man to know the multitude of points in which his relations to the public and his fellow-practitioners are subject to a well-settled body of law, to the end that he may avoid unexpected trouble on the one hand, and know his rights and powers on the other.

This new work is comprehensive and authoritative, and its possession and perusal will save many times its cost if only in the item of collecting bills, as well as many anxious hour. The well-established physician who has bought this knowledge in the costly school of experience will appreciate the value of such a



work and will give it a place in his library within easy reach for frequent consultation. The young physician will be wise to profit by the knowledge so conveniently placed at hand, and will be glad to avoid the trials and troubles of his elders. Conversely, it affords the lawyer a knowledge of the relations of his profession to that of medicine. It is an unusually serviceable book.

**Letters to a Neurologist.** By Joseph Collins, M. D. These letters, "with brief replies," were first printed in the Medical Record in the year 1908. Later, they appeared in book form and are now before us in a second enlarged edition.

They purport to be letters written by patients to the author and the replies by him. These letters are written in a facile, and, at times, humorous manner, and the reader marvels at, and envies the luck of the doctor who has brought under his care so many bright and educated patients as their letters prove them to be. One of them, evidently a sufferer from "Angst neurose," begins in this manner: "Your suggestion, when I saw you at your office, that I should write a statement of my complaint, seemed quite reasonable until I began to try to put the facts on paper. Even then it seemed reasonable but also impossible. In the first place I do not like to write. . . ." Fortunately this patient overcomes both his diffidence and his dislike to writing, and manages to write a letter of about 1,500 words, which well describes his deplorable state. How could anything be more descriptive of the anguish of the "Angst neurotic" than this: "I feel sometimes I can't withstand the sensation another moment, and if I don't get relief I'll explode or go up in the air or in some other manner cease to be." Or, what we read a few lines further on, when this poor sufferer describes his condition on the occasion of a short railroad trip which he took quite against his own wish with the lady of his anguish. "The perspiration simply rolled from me all the way, and I was most uncomfortable. I kept saying to myself, 'If I ever get out of this, I'll never get into such a mess again.' When we returned, I went home, changed all my underclothes, which were so wet they dripped when wrung." In his reply, the doctor makes this reference to a well-known New England village: "For this purpose I recommend a small book recently published by Lipincott of Philadelphia, entitled, 'Why Worry?' from the pen of a physician in a neighboring city long known as the Athens of America, sometimes reviled as the cradle and nursery of 'Antis' of every description, but universally recognized as the abiding place of the Ancient and Honorable Artillery.

The little book reads well and touches the great neuroses and psychoneuroses, and gives a great deal of common-sense advice as to how to talk to this large class of patients. It gives the kind of information which one cannot get out of textbooks and monographs, and to the man who wishes to employ psychotherapy, yet has not made a special study of this

branch of healing, it can be warmly recommended. G. E. N.

**New Aspects of Diabetes.** Pathology and Treatment. By Prof. Dr. Carl von Noorden, Professor of the First Medical Clinic, Vienna. Lectures delivered at the New York Post-Graduate Medical School and Published by their authority. New York, E. B. Treat & Co., 1912. \$1.50, cloth.

In this series of lectures Dr. Von Noorden has enlarged upon his previous studies of diabetes mellitus and general metabolism, and has explained more satisfactorily many questions previously in doubt. The chapters on treatment are of particular interest to the internist.

The first lectures are devoted principally to a study of foods in regard to their ultimate conversion into sugar, and the normal control of sugar formation. The author states that the liver controls the formation and distribution of sugar and that the other organs elaborate and consume it, but do not share in its production. He believes that the pancreas and suprarenals (Chromaffin system) are the principal regulators of the liver in regard to sugar formation. It has been clearly established that the over action of adrenals causes over production of sugar; that the thyroid and hypophysis, when overacting, inhibit the action of the pancreas, thereby increasing the production of sugar, while the parathyroids, by stimulating the pancreas, reduces the formation of sugar. In addition to these factors it is found that psychical factors may increase the production of sugar by overstimulating the chromaffin system.

One of the most important sources of overproduction of sugar is the stimulation caused by the material taken up to the liver from the intestine. The immediate cause of the overproduction of sugar in diabetes is the morbid overexcitability of the sugar factory in the liver. The older theory that failure of the tissues to oxidize normal amounts of sugar, thus producing glycosuria, is consequently without support.

In considering the treatment of diabetes, Dr. von Noorden calls especial attention to the fact that restriction of carbohydrates is still the essential feature, in spite of all the work that has been done. In attempting to avoid the many complications to which the patient is subject, we must remember that the absence of hyperglycemia is the special thing, rather than the mere absence of glycosuria. The urine must be persistently free from sugar for several weeks, before we can expect hyperglycemia to disappear.

Another interesting point is the fact that overworking of the sugar factory not only leads to an immediate over-production of sugar, but also leaves behind an increased excitability of the factory.

We have been in the habit of depending largely upon albuminous foods to maintain the nutrition of diabetics. There is considerable danger in this, as large albumin intake overstimulates the sugar factory, although this de-

pende much upon the type of albumin used.

Never more than three "oatmeal days" are given in succession, but this form of treatment is exceedingly important, as it gives the sugar factory freedom from over-stimulation.

In considering the treatment of acetonuria it must be borne in mind that sudden withdrawal of all carbohydrates—even in a healthy individual—frequently causes a physiological acetonuria, and this same thing is the rule in diabetics, and unless very excessive and persistent it should be tolerated, for it eventually clears up in most cases. Out of 82 cases which died while under this form of treatment, no death was due to diabetic coma. In the moderately severe cases persistent acetonuria is not incompatible with many years of comparative comfort. Occasionally it is advisable to use the alkalis.

In the more severe forms acetonuria must be combated, not by the "allowance of carbohydrates, but by a systematic calming of the sugar-forming process."

This volume, while not very large, contains many deep problems relating to the subject of diabetes, and is deserving of profound study.

The publishers take pleasure in forwarding, upon request, an autograph portrait of Professor von Noorden.

T. R. LOVE.

#### COMMERCIAL SODIUM SALICYLATE

W. S. Hilpert, Chicago, (Journal A. M. A., April 12), gives the results of the investigation made by the Council on Pharmacy and Chemistry of the American Medical Association on the purity of commercial sodium salicylate. These investigations have been made because some manufacturers have claimed superiority for that made from oil of wintergreen or oil of birch, and some physicians have endorsed these claims: "Thus far two reports have been published: (1) the critical review of the literature by Eggleston, which showed that in spite of the claims and intimations of some manufacturers the evidence in favor of salicylates made from natural oils is actually very slight and that the evidence against artificial salicylate is even less; and (2) the pharmacologic study by Waddell which showed that there is no difference in the physiologic action of the synthetic and "natural" sodium salicylates. In this paper, the author explains the method of investigation and states that results indicate that except for some differences in color of aqueous solutions, all brands examined are essentially alike in properties and compo-

sition and "seem to warrant the conclusion that the cheapest commercial synthetic sodium salicylate is the equal of the higher-priced brands of the synthetic kind or the costly "natural" product.

#### PULMONARY INSUFFICIENCY.

On account of the extreme rarity of pulmonary valvular insufficiency, R. Abrahams, New York (Journal A. M. A., April 12), reports a case diagnosed as such. Out of 24,000 admissions to the Johns Hopkins hospital only three of this type were found, and only one of these was recognized during life. In his practice in the New York post-graduate hospital clinic, with 800 cardiac cases per year, the case reported is the first that has come to his notice in eleven years. The symptoms complained of were moderate dyspnea on exertion, slight cough and expectoration and some blueness of lips and finger tips. A chest examination showed the lungs normal. Inspection of the precordium showed a very slight displacement of the apex to the left of its normal position and a strong pulsation in the third left interspace, occupying about one-half inch from the sternum. Palpation gave a very marked diastolic thrill over the third left interspace close to the sternum. Percussion indicated one inch enlargement of the right heart. There was little, if any, enlargement of the left heart. Auscultation revealed normal first and second sounds over the apex and the aorta area. The pulmonic first was quite accentuated; the second pulmonic was replaced by a loud, blowing, diastolic murmur. The point of maximum intensity of the murmur was over the third left interspace. The course of the murmur extended from the second to the fourth left interspace, along the left edge of the sternum, where it abruptly stopped. The pulse was full, regular and eighty to the minute. The pulse remained the same with the arm in the upright as in the horizontal position. From these symptoms pulmonary insufficiency was diagnosed, but it could also be diagnosed by an exclusion of the signs of aortic insufficiency or functional disturbance. Two electric cardiograms were taken, which are figured. The cause in this case is unknown. There is no history of any disease to account for it; the Wassermann test was negative and the symptoms occurred rather late in life (patient a woman twenty-six years old) for it to be supposed congenital.





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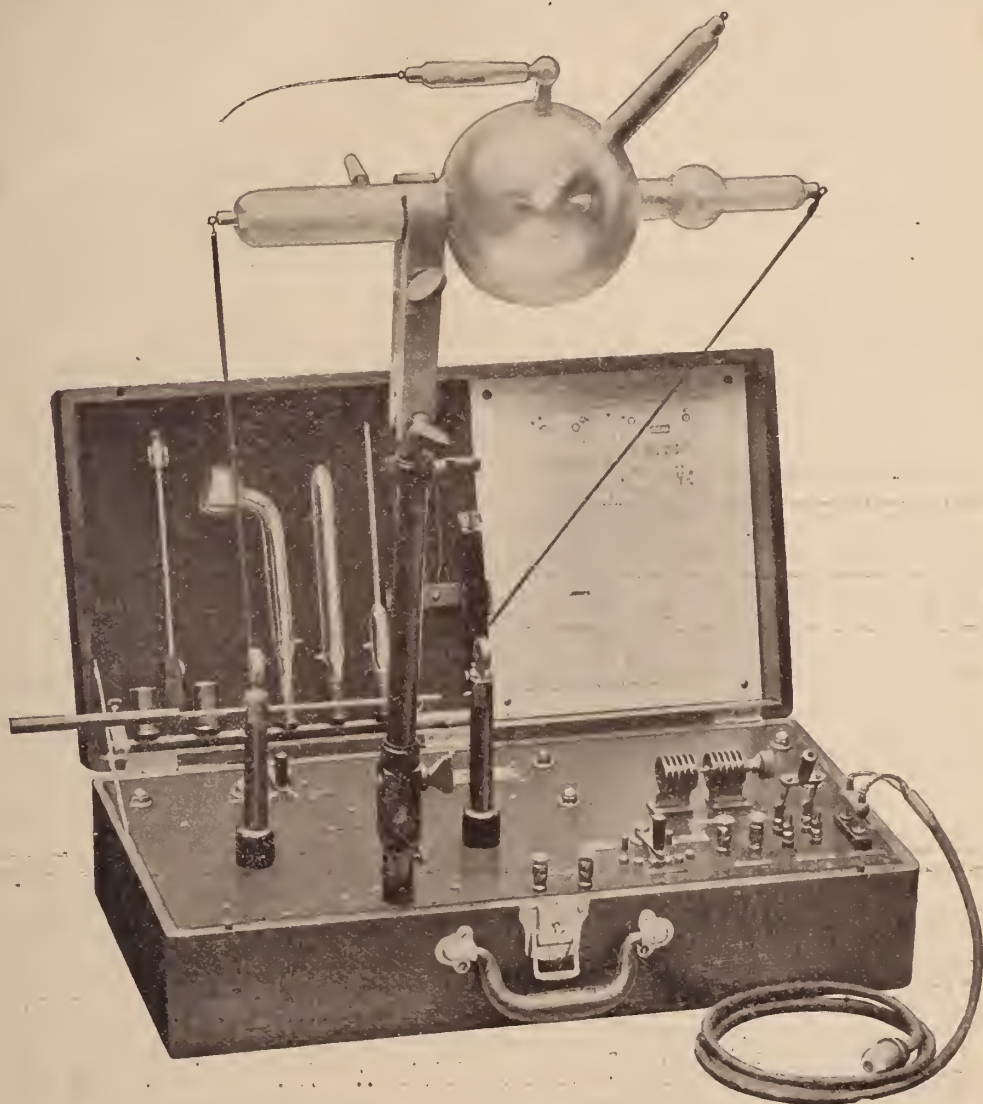
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THE JOURNAL OF THE COLORADO MEDICAL SOCIETY  
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JULY, 1913.

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VOL. X

JULY, 1913

NO. 7

## Editorial Comment

### THE PRAISE OF THE PHYSICIAN.

In the June issue of Colorado Medicine there was an editorial on "Medical Proverbs." Only a few of the many caustic sayings that concern the physician and his occupation were selected for comment. There were enough, however, to illustrate the nature of the medical proverb. It would be a pleasant antidote to the bitterness of these sayings to present some that were complimentary to the physician but there are none. Many artful writers have expressed their appreciation of medical services in words of high praise, but their sayings have not attained proverbial familiarity.

Our English version of the Bible represents St. Paul as speaking of "Luke, the beloved physician." Translation of this remark into other languages has yielded "Luke, the beloved, the physician."

The preeminence of St. Paul in religious matters, which were the only important matters for fifteen centuries, might make us yearn for some words of praise from his lips which have been credited with divine inspiration. Did he, then say "beloved physician" or "physician" and "beloved?" The evidence is against us.

There is no reason to believe that Paul's affection for Luke was attributable to his skill as a physician, nor to the apostle's appreciation of the medical services of the time, nor to Luke's having embraced the great opportunity which medicine offers for altruistic service. The only record we have of Luke's medical knowledge or work is Paul's statement that he was a physician. It is supposed that Luke was a kind of secretary to the premier apostle, Paul, and wrote his master's account of those great events in which Paul played so important a part. Luke was the presumed author of two gospels, the one that bears his name and the one called "The Acts." His writing shows literary ability and judgment in the selection of the accounts of the written and oral history of his day. The affection which Paul lavished upon him was due to his constancy in a faith which he made it his business to spread and to transmit to nations still unborn, which were to arise in undiscovered countries, beyond untraveled seas.

Robert Burton, who dissected melancholy and taught us its anatomy called the physician "God's intermediate ministers" and in another place "*manus dei*" (the hand of God). He took care to add to this that he was speaking only of physicians who were "learned, skillful and honest."

Here are some verses from Crabbe that

express about as well as poetry can, the inspiration and ideal of the physician:

"Glorious your aim—to ease the labouring heart,  
To war with Death, and stop his flying dart;  
To trace the source whence the fierce contest grew,  
And life's short lease on easier terms renew;  
To calm the frenzy of the burning brain,  
And heal the tortures of imploring pain;  
Or, when more powerful ills all efforts brave,  
To ease the victim no device can save,  
And smooth the stormy passage to the grave."

The sweetest of all the things that have been said of the physician came from the pen of Robert Louis Stevenson. He whose malady his medical attendants could not arrest, gave them, nevertheless, the richest tribute his loving heart could bear.

"There are men and classes of men that stand above the common herd; the soldier, the sailor and the shepherd not infrequently; the artist rarely; rarer still the clergyman; the physician almost as a rule. He is the flower (such as it is) of our civilization; and when that stage of man is done with, and only remembered to be marveled at in history, he will be thought to have shared as little as any in the defects of the period and most notably exhibited the virtues of the race. Generosity he has, such as is possible to those who practice an art, never to those who drive a trade; discretion, tested by a hundred secrets; tact, tried in a thousand embarrassments; and what are more important, Herculean cheerfulness and courage. So it is that he brings air and cheer to the sick room, and often enough, though not so often as he wishes, brings healing."

After this expression of appreciation of the business of medicine and of the character of those that follow it, Stevenson reveals his gratitude to his physicians personally. One name among the several will be familiar to many readers of Colorado Medicine.

"Gratitude is but a lame sentiment; thanks, when they are expressed, are often more embarrassing than welcome; and yet I must set forth mine to a few out of many doctors who have brought me comfort and help; to Dr. Willey of San Francisco, whose kindness to a stranger it must be as grateful to him, as it is touching to me, to remember; to Dr. Karl Ruedi of Davos, the good genius of the English in his frosty mountains; to Dr. Herbert of Paris, whom I knew only for a week, and to Dr. Caissot of Montpellier, whom I knew only for ten days, and who have yet written their names deeply in my memory; to Dr. Brandt of Royat; to Dr. Wakefield of Nice; to Dr. Chepmell, whose visits make it a pleasure to be ill;

to Dr. Horace Dobell, so wise in counsel; to Sir Andrew Clark, so unwearyed in kindness, and to that wise youth my uncle, Dr. Balfour."

Some years ago, about 1894, Dr. Karl Ruedi left his "frosty mountains" of Switzerland and came to dwell among ours. This fine tribute of Stevenson's will be applauded by every one in Colorado who came to know the character and to admire the attainments of this "good genius of the English" at Davos.

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### THE SAINTHOOD OF SCIENCE.

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To man has been given "a triple gospel—of his soul, of his goods, of his body." These words of Sir William Osler's naturally bring the query, what should be "the attitude of the Church toward the gospel of the body, toward the men who have given us this gospel?" Henry Fairfield Osborn, director of the American Museum of Natural History in New York, and a paleontologist of note, puts this question in *The Churchman* (New York, Prot. Epis.), and answers it by declaring that there should be a statue of Louis Pasteur in the Cathedral of Saint John the Divine, and that we should "institute a new order of sainthood" for men who, like him, "showed the way to the physical redemption of man." Some such tribute, thinks Dr. Osborn, would have been rendered to Pasteur if he had lived in "the early centuries of the Church before there had arisen any divorce between the study of nature and the matters of the spirit," and "had won the love of his generation and the reverence of succeeding generations by his mighty works." And the writer adds:

"Our belief today is that Pasteur should stand as a symbol of the profound and intimate relation which must develop between the study of nature and the religious life of man, between our present and future knowledge of nature and the development of our religious conceptions and beliefs."

Not that Professor Osborn is here propounding any new theory. He quotes St. Augustine and Dante to show their "theol-



ogy was imbued with a deeply theistic view of nature." But since their days

"The Church has passed through a very critical period of skepticism as regards nature. This is perhaps an original view of skepticism, but there is no way of evading its application; if nature represents the wisdom and goodness of God, to be blind to its interpretation is a form of skepticism—devout and well intentioned tho it may be. . . . If the laws of nature are manifestations of the divine power and wisdom, as we proclaim in our services, the attitude of the Church toward these laws should not be hesitant, defensive or apologetic, but active, receptive and aggressive.

Considered in this way, the great scientific inquiry of the latter half of the nineteenth century, so far from being regarded as destructive, is a constructive, purifying and regenerating movement; it takes us back to the lost faith of our fathers, a faith which spiritualized the Old Testament, a faith which finds in nature a manifestation of the divine order of things. If Newton opened to us the new heavens, Darwin showed us the new earth, Pasteur showed the way to the physical redemption of man. If we were to rewrite the Litany in the twentieth century, for the passage, 'From plague, pestilence, and famine, Good Lord, deliver us,' we should read, 'From ignorance of Thy laws and disobedience of Thy commands, Good Lord, deliver us.'"

From the standpoint of "this older teaching of Augustine and Dante," according to Dr. Osborn,

"The life work of Louis Pasteur was more than humanitarian, it was more than scientific, it was religious. He regarded natural processes which in their superficial view appear relentless, cruel, wholly inexplicable, as part of a possibly beneficent order of things; he again revealed, through his profound insight, through his unparalleled toil, discouragement and even scorn on the part of his contemporaries, deeper laws which are beneficent, protective and restorative in action. He was the evangelist of Osler's 'third gospel':

"'And the third gospel, the gospel of his body, which brings man into relation with nature—a true evangelion, the glad tidings of a conquest beside which all others sink into insignificance—is the final conquest of nature, out of which has come man's redemption of man.'"

And this brings the final question regarding recognition of such service:

"Should we not institute a new order of sainthood for men like Pasteur? Could we find one more eminent for consecration, piety and service in life and character than this devout investigator? Entrance to this order would be granted to those who through the study of nature have extended the bounds of human knowledge, have bestowed incomparable blessings on the human race, have relieved human suffering, have saved or prolonged human life. Would not a statue of Louis Pasteur in the

Cathedral of St. John the Divine proclaim the faith of the modern Church that the two great historic movements of love and knowledge, of the spiritual and intellectual, and the physical well-being of man, are harmonious parts of a single and eternal truth? On the base of such a statue might be inscribed the words written at the most perplexing period of Pasteur's life:

"'God grant that by my persevering labors I may bring a little stone to the frail and ill-assured edifice of our knowledge of those deep mysteries of Life and Death, where all our intellects have so lamentably failed.'"

## Original Articles

### TREATMENT OF POTT'S DISEASE OF THE SPINE.\*

GEO. B. PACKARD, M.D., Denver.

My excuse for writing a paper on this seemingly threadbare subject is that the severe deformities so frequently seen at the present day, in spite of the improved methods of treatment, are sufficient evidence that the prevailing methods of treatment are not wholly satisfactory.

Dr. H. L. Taylor, an excellent authority, remarks in his *Surgery*, of recent date, on this subject: "Occasionally cures are obtained with little or no deformity and, in exceptional cases, marked deformity may recede under treatment but, as a rule, deformity progresses slowly for a number of years, though pain and acute symptoms are quickly relieved and the final result is recovery with more or less, often considerable deformation." I fully agree with this statement. We can relieve pain and acute symptoms, but we must not forget that the deformity may progress, especially in the dorsal region, unless treatment is absolutely efficient.

The importance of proper surroundings, good food and fresh air, both day and night, cannot be too strongly recommended in conjunction with the mechanical treatment.

\* Read at the annual meeting of the Colorado State Medical Society, September 25, 26, 27, 1912.

The objects of mechanical treatment are to prevent traumatism by movements of the diseased parts, and to prevent the super-incumbent weight from crowding the bodies together, producing a posterior deformity. The methods of treatment now in use, are, first, horizontal fixation; and, second, ambulatory supports, the latter including the plaster jacket and the steel brace. The selection of the method of treatment will depend on the age, location, duration and many other conditions of the disease.

In the lumbar and lower dorsal regions, good results without noticeable deformity may be obtained with both forms of ambulatory supports. If there is much lateral deviation, the plaster jacket will be preferable. Excellent results with slight or no deformity also occur in the cervical region from the use of the Taylor brace with head support, or from the use of the Calot jacket, extending to the chin and occiput. In the middle and upper dorsal region, the situation is very different. While the patient may be easily relieved from pain and discomfort, it is the most difficult region of the spine to treat from the standpoint of prevention of deformity.

An examination of the normal spine shows a forward curve in the cervical and lumbar regions and a backward curve in the dorsal region. As deformity in Pott's disease is increased by pressure on diseased bone, it is very evident that an increase is more likely to occur in the last region where the burden of pressure is borne upon the concave instead of the convex side than in the cervical and lumbar regions. A diagnosis is not usually made as early in this part as it does not permit of much motion and therefore makes it more difficult to detect muscle spasm, one of the earliest symptoms. For this reason a larger proportion of cases of dorsal Pott's disease will show some deformity when they apply for treatment. The con-

stant normal movements of the ribs in respiration produce slight traumatism in this region and adds to the difficulties of treatment.

While disease of the cervical and lumbar portions of the spine has been controlled and deformity prevented by braces and plaster jackets, it cannot always be successfully treated by such methods in the dorsal region. Unfortunately we still see pitiable deformities in many cases of dorsal Pott's disease, treated in the upright position. Pain is relieved by an ambulatory support but an increase of curvature is so gradual that it may be unnoticed until considerable deformity has taken place.

It is in this region, therefore, that the most efficient method known should be adopted and continued for a sufficient length of time to control the disease and prevent deformity. From my personal experience, I have no hesitation in saying that horizontal fixation thoroughly carried out is by far the most satisfactory treatment in dorsal Pott's disease. I have been amazed at the results in these cases at the Children's hospital in Denver where we have been able for the last three years to carry out very carefully this treatment.

Dr. Whitman remarks that, as the ultimate deformity of Pott's disease is, in great degree, caused by the force of gravity acting on a weakened spine, the most effective treatment must be fixation in the horizontal position, for in this position the strain of use and the pressure of superincumbent weight can be removed completely.

The reports of Dr. Calot of Berk sur Mer, France, have been most remarkable from the use of jackets extending over the shoulders and in some cases including the neck, chin and occiput, with a fenestra in front to increase comfort, and a smaller one over the kyphos through which increased pressure may be made on either

side of the spine. The writer learned, however, on recently visiting Dr. Calot's hospital, that he keeps most of his cases recumbent from one to two years.

Ridlon and Jones remark in their lectures on Orthopedic Surgery: "In the upper dorsal region from the first to the sixth vertebra, the deformity may be expected to increase under any form of treatment which does not include prolonged and uninterrupted recumbency as its essential feature."

The advantages of treatment, therefore, by recumbency in this region are very apparent. The superincumbent weight is removed, the diseased part is put at rest and the deformity is prevented. If the latter has already occurred, it may recede in some cases if the details are carefully carried out. In the first place, it is not a difficult treatment to pursue in a well-conducted hospital.

The most convenient form of horizontal support is a rectangular frame of gaspipe, covered with strong canvas. It is very difficult, however, to prevent the canvas from sagging even if the frame is bent to assure over-extension of the spine. Therefore I use a plaster of paris back moulded to the spine in a hyperextended position. The back cast also prevents damage to the various vertebrae in turning the patient over for cleansing and other purposes. Further extension of the spine can easily be obtained at any time by placing a piece of felt under the affected part, which increases the pressure of the back cast. The patient is placed upon the frame with the plaster of paris back properly adjusted and held in this position by a front piece or apron strapped to the frame. The patient will soon become accustomed to the restraint and the irritability and pain will gradually subside. As a rule, the child should be removed from the frame once a day, the back inspected, bathed with alcohol and powdered. A large

portion of the time should be spent in the open air.

Almost invariably the general condition improves, the weight increases, growth progresses normally and pain and discomfort disappear. It was formerly considered that treatment by recumbency could not be continued but a short time or only during the acute and painful stage. I am satisfied, however, that it can be continued with great advantage to the patient for twelve or eighteen months and in many cases longer. If, however, after several months of recumbency, the patient becomes anemic and listless, it is a good plan to get him up for a few weeks and then, if there is the slightest tendency to acute symptoms or increase of deformity, to return to another period of recumbency. This treatment is much better adapted to children than it is to adults. It cannot be continued very long with the latter except in cases of paralysis or in the acute painful stages.

Of course this treatment must be supplemented sooner or later by ambulatory treatment, but the tendency to increase of deformity by a properly applied plaster jacket or Taylor brace after two years of recumbency is very slight as compared to the ambulatory treatment alone. I cannot, therefore, too strongly emphasize the importance of treating spinal cases of the dorsal region by horizontal fixation.

It is important that the profession should realize that it is not a simple matter to treat successfully a case of Pott's disease and prevent deformity, notwithstanding the great value of plaster jackets and steel braces. It is only by the most painstaking methods referred to above, carefully and persistently carried out for a number of years, that we can hope to attain anything like satisfactory results.

Operative procedures to secure absolute immobilization of the involved vertebrae has been done and reported recently by



Hibbs and Albee. The latter believes it is well, when possible, to secure a recession of the kyphos by long recumbency before operating. The Albee operation is less formidable and the technique is as follows: With the patient in the ventral position, an incision is made directly over the tips of the prominent spinous processes of the kyphosis. Each process is then split longitudinally for about one inch and a quarter into two portions with one-third of the process on the left and two-thirds on the right. The soft tissues between the processes are then separated parallel to the muscles. Green-stick fractures are then produced at the base of the one-third portions of each of the processes. A wedge-shaped cavity is thus produced ready to receive the bone graft. A prism-shaped piece of the tibia from its anterior internal aspect is then removed with the periosteum intact on two of its surfaces. It is placed in the interval between the portions of the spinous processes. The dense fascia over the tips of the processes is then approximated, this holding the bone graft in place. The skin is now closed. The bone graft united to the vertebræ involved and to the healthy ones adjoining is supposed to prevent further deformity by leverage and splint action and stop the progress of the disease.

Favorable results are reported by both operators, but this procedure is in the experimental stage and until more time has elapsed it will be difficult to form an opinion as to its real value. In the meantime we can immobilize the spine and remove superincumbent weight, and prevent deformity even in the progressing dorsal cases if we persistently resort to horizontal fixation.

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**Clever.**

"I had a poet on one side and a millionaire on the other."

"What did you talk about?"

"I talked to the poet about money and to the millionaire about the intellectual life."—Life.

## *THE TREATMENT OF LATERAL CURVATURE OF THE SPINE.\**

H. W. WILCOX, M. D.

DENVER, COLO.

Because lateral curvature of the spine is one of the most common of the deformities to which the human body is subject, the problems of its etiology, pathology and treatment have been matters of profound and exhaustive study by orthopedists as is evidenced by the voluminous literature upon these subjects during the past twenty-five years.

As one etiological factor after another has gained prominence, treatment has been directed first to improving the strength and tone of the muscular system on the theory that the asymmetry of the spinal column and trunk were due solely to weakness of the muscles of one side of the body. This was soon discredited by a more thorough knowledge of the pathology, which proved that not only the muscles but also the ligaments and intervertebral cartilages and the bone structure underwent adaptive changes in accordance with the "law of functional adaptation" of Professor Wolff, which may be stated as follows: "Every change in the form and function of the bones, or of their function alone, is followed by certain definite changes in their internal architecture, and equally definite secondary alterations of their external conformation, in accordance with mathematical laws." As applied to the individual vertebra, this means that if the stress to which the bone is subjected is altered not only will the external contour be changed but the internal cellular arrangement will be modified. But the treatment of scoliosis has not kept pace with our knowledge of its pathology. Supplementing the medical gymnastic treatment, braces were resorted to. These were neces-

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sarily complicated and efficient only to the extent of holding the patient in a corrected position while being worn, but totally inefficient to effect any permanent straightening of the spinal column. Later forcible correction was the method used. Powerful leverage machines were applied to the back and pressure made up to the limit of the patient's endurance.

This correcting pressure, of course, could be applied for only a short period at any one treatment, so that when the spine had been rendered more flexible plaster jackets were applied while the spine was held in the corrected position.

When Sayre popularized the use of plaster of paris jackets in these cases, applied with the patient suspended so that the superincumbent weight was practically removed, it was thought that the riddle of the proper treatment of scoliosis was at last solved, and while this method marked a distinct advance it was found not to correct the deformity in many cases.

The difficulty in the reduction of this deformity is largely the result of the complexity of the distortion, for not only is there a lateral bending of the spinal column, but also a torsion or twisting of the spine on its longitudinal axis so that the bodies of the vertebræ in the affected region are often much more out of symmetry than are the spinous processes.

The presence of rotation seriously complicates the question of treatment because when lateral pressure is applied to the ribs for the purpose of straightening or supporting the column a portion of the pressure, at least, reaches the column so far back, by reason of the articulation of the ribs with the transverse processes that it may even promote rotation, or at least prevent its reduction.

It is not the purpose of this paper particularly to discuss the treatment of the early cases, the so-called functional or postural scoliosis, in which there is a slight

curve of the entire spine to one side of the midline, usually to the left, without rotation. This condition is caused by a weakened or under-developed musculature and the treatment is manifestly to be directed to the strengthening of the muscles and the training of the patient to the habitual assumption of correct posture.

Particular attention is called at this time to a recent distinct advance in the treatment of structural scoliosis where organic changes have taken place, the class of cases in which treatment has given, in the past, indifferent results, at the best.

The tendency in treating these cases in the last few years has been the use of plaster of paris jackets applied with the patient in the prone position, because, in this way, the rotation is relatively less prominent, and the lateral curves more easily diminished by direct side traction. The new method, to be described, was worked out at the Children's hospital in Portland, Maine, by Dr. E. G. Abbott upon two principles: first, over-correction of the deformity so that motion is established in all directions to the extreme of normal motion; second, fixation in the over-corrected position until the parts are so thoroughly stretched and changed in their shape that the deformity will not return.

The method used was devised from observations made upon children sitting in the faulty position, such as is assumed in school while writing, a flexed and laterally curved position of the spine, usually to the right in the dorsal region with the right shoulder elevated and the spine and attached ribs rotated toward the convex side of the curve.

The deduction was made from this study that if the patient was placed in a diametrically opposite position, that is, the deformity over-corrected, and held there a sufficient length of time, that the distortion could be obliterated. The technique to accomplish this may be described brief-

ly as follows: A specially constructed quadrilateral gaspipe frame is used and a canvas hammock is stretched upon this. The hammock is made so that one side is several inches longer than the other and when placed upon the frame the longer side sags down several inches. Three gauze shirts are placed upon the patient for the purpose of giving one space for permanent pressure pads and another for those to be applied from time to time later. All bony prominences are carefully protected with heavy felt. The patient, thus prepared, is placed upon the hammock face upward with the bulging or rotated side of the back against the straight edge of the hammock and the depressed side allowed to sink down in the sagging portion. The lower limbs are flexed on the body and held in leg holders at an acute angle so that the weight of the body helps to force the patient into the corrected position. The arm corresponding to the low shoulder is elevated above the head and the opposite one placed on the side of the frame. Straps are then applied so as to pull the body in the desired direction. One passes under the low shoulder, elevating it, and drawing the upper end of the spine toward the convex side. The second strap passes around the pelvis and is fastened to the same side of the frame as the first. The third strap passes in the opposite direction, around the most prominent part of the deformity of the dorsal spine, so that the spine is made straight or a curve in the other direction is caused. A fourth strap is sometimes used, passing over the anterior prominent ribs on the side corresponding to the concavity; this is attached to a bar below the patient and assists in untwisting the rotation. The plaster bandages are now applied in the usual way, the cast being made unusually thick. A large window is now cut in the back over the concave side, so as to allow the depressed ribs to push backward and three smaller slit-

like openings are made, one over each breast and another in the axilla to help in adjusting the pressure pads. The jacket is put on without an anesthetic, and the patient is kept in bed several days. By this time the parts have so accommodated themselves to the new position that there is an appreciable space between the former bulging ribs and the jacket both over the back and front. Pads of firm felt are now insinuated to make further pressure, and this is repeated as soon and as often as the improved position allows. A second jacket is applied in from six to eight weeks. The final corrective jacket is removed at the end of the time, at which over-correction is thought to have been accomplished. This has been in most cases from three to nine months. In some cases it seems best to apply several jackets in rapid succession, following up the improvement in position in this way, rather than by the use of felt pads.

The after-treatment consists in carefully-given gymnastic exercises and massage to tone up the muscles which have suffered somewhat from disuse, and to bring back the spine to the normal position. During this time a light, removable plaster or celluloid corset should be worn. This method seems to be applicable to all ages and to curves due to various causes and of many years' duration.

Records of the original deformity and of the improvement gained should be made by means of photographs and x-ray plates.

These patients are preferably treated in the hospital, where they can be under observation following the correction. This work has been successful not only in the hands of the originator of the method in a large number of cases, but has been endorsed and adopted by orthopedists in various parts of this country, and while the ultimate results of the treatment of these cases by this method cannot be told until at least two years have elapsed since the



corrective treatment was begun, still we feel justified at this time in thinking that this is a much more efficient treatment of fixed lateral curvature of the spine than any heretofore known.

This paper is in the nature of a preliminary report; we regret that we are not able to give more than an outline of the method of treatment at this time. The orthopedic staff of the Children's hospital of Denver are treating several cases in this way but they have not been carried far enough toward the final stage to make any detailed report justifiable at this time; however we hope to make a further report of cases at some future date.

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#### DISCUSSION OPENED.

**Dr. Leonard W. Ely, Denver:** It is a pleasure to listen to such scientific papers as these. Probably in the memory of most of us a symposium in orthopedic surgery consisted of an exposition of various forms of braces, and of extravagant claims for their therapeutic efficiency. These gentlemen have shown by their dissertations that orthopedic surgery has passed through the stage of wild therapeutic claims, and has reached that of scientific criticism.

Dr. Packard's paper ten years ago would probably have been considered heretical; to admit that we could not cure all these cases of tuberculous spine with some form of apparatus easily applied, would have been considered rank heresy. The significant point that he brought out is the necessity, if we embark upon conservative measures not only of making them most thorough, as thorough as possible at any cost, but also of continuing them through a long period of years. Tuberculous joint disease, conservatively treated is one of the most tedious diseases that we know of. It cannot be cured in a year—very rarely can it be cured in less than three years. These cases often drag out for five years, and sometimes, when the patients have been dismissed after a thorough course of treatment, and we think that they are cured, the appearance of a tuberculous abscess—perhaps years afterwards—shows the lighting up of the disease. Personally I do not believe that a tuberculous spine in an adult, which has gone to the extent of creating deformity, can be cured by any conservative means whatever. Nature seems absolutely unable to come to our relief. We can relieve the pain, but as soon as we remove the supporting treatment by splints the patient relaxes. The operations of Albee

and Hibbs afford the first rational hope that we can cure these patients. Whatever the idea in the minds of their originators, these operations cure, not by removing the tuberculous tissue, but by causing a bony ankylosis and so starving out the disease.

Dr. Wilcox in his discussion of rotary-lateral curvature has also done a distinct service. Time was when any enthusiast with any new form of treatment would make the most extravagant claims. Either he was deceived himself or he was deceiving others.

In my younger days I attacked the problem very enthusiastically in a clinic, and conducted for years a large class of these scoliotic patients. At the end of that time I never thought that I had produced any appreciable amelioration of the curve. I could teach the patients to stand better, and to disguise the deformity, but that was all. It is too early to say yet what Abbott has done, but everybody who has been to see his treatment is most enthusiastic, and we think that here again we are going to overcome a deformity which we have hitherto been obliged to admit was absolutely beyond our reach.

Paget's disease is a mystery. We do not know its cause. We have been studying the bone changes. I think perhaps that is the reason we never have reached any logical explanation of it. I believe that every bone disease is due to disease of the marrow within the bone and that the bony changes are merely results of these marrow changes. If you listened to Dr. Jones' address carefully, in the report that he gave of his case you heard that there was very suggestive hypermic, fibrous condition of the marrow, which almost invariably makes a hypertrophy of the bone. I think in our examination of these cases, if we will concentrate more of our attention on the active marrow than we do on the passive bone, we will sooner arrive at an explanation.

**Dr. W. L. Dorland, Pueblo:** I wish to show the extreme adaptability of aluminum for the making of a stiff jacket for use in cases of Potts disease of the spine in children—such as the little boy, two and one-half years old, whom I have brought here.

This small child was always very restless and hard to handle, a typical example of a spoiled child, unruly and irritable.

In order to shape the aluminum jacket, I took the last plaster jacket, made on and worn by the child, to the foundry and had an iron core cast in it. On this metal torso or anvil is molded the aluminum jacket. Such a sheet of aluminum, sufficient for the purpose as I show you, costs about ninety cents. It is about the lightest metal in existence, with the required stability, adapts itself extremely well to any shape, and affords a perfect reproduction of the latest and most effective plaster jacket. I shall undress the child, if you will allow me, so that you may see how easily the jacket is adjusted or removed.

Those who attended the recent clinics held in Pueblo, will remember that a few weeks ago this child was unable to walk except a few steps laboriously with hands on hips or

knees to support the weight of the shoulders; that the irritation of the psoas muscle, which produces apparent shortening and eversion of the lower limb, was marked on the right side, while on the left side of the middle lumbar region, was an abnormal bony mass resembling an abscess, but really due to distortion of the vertebral bodies by the breaking down of their contour. This back required frequent inspection on account of irritation and pain which he constantly suffered until a well-fitting plaster jacket was applied and at intervals afterward when we had to cut away the jacket and look for an abscess. He is born of a very tuberculous mother. She died a year ago. There is also tuberculosis in the family on the father's side, so we might safely call that a tubercular spine, though there is some history of various falls to furnish a starting point.

I show you here the last jacket he wore from which the torso was cast. You notice the marks of the molten metal poured into it. When we make a larger one after awhile, we will repeat the process—a well-fitting cast, a torso at the foundry, another aluminum jacket from the novelty works. We can make a better one than this, as it is not long enough to get as much pressure on the hips as we would like. It interfered with the flexion of his thighs and he would not submit to it, so we had to trim part of it away; but it holds his body comparatively straight, as you see, and is a vast improvement on his former condition. After awhile he may consent to have his movements somewhat hampered for the sake of a straighter back. His hips will have developed more and furnish more pressure point.

The difficulty in fitting a spirited child so young as this, as fleshy and roly-poly as a fat puppy, is very great. When children are old enough to realize the calamity of a hunchback, they submit readily to the fitting of any appliance, and the way in which this light, strong corset, which can be worn under clothing without attracting notice, appeals to the vanity of a school child, is charming to see.

#### DISCUSSION CLOSED.

**Dr. George B. Packard, Denver:** Dr. Dorland's appliance is a very ingenious one and one that could be used in many cases. It is lighter than most appliances that we use, but with good plaster of course we can make our casts so light that as a rule I have not adopted any other method except a light plaster cast for the later treatment. But the object of my paper was to emphasize the importance of horizontal fixation in the dorsal region where ambulatory treatment is almost sure to allow some increase of deformity, and it is so gradual that unless we keep these cases under observation absolutely every day we are bound to lose ground.

Dr. Wilcox's paper on structural lateral curvature shows that a great advance and discovery has been made by Dr. Abbott. We are all well aware that structural lateral curvature has baffled the wisdom of ages, and probably not in the last ten years has anything occurred compared to this in the way of advance or

discovery in orthopedic surgery. From the little experience we have already had at the children's hospital it looks as if we were able to cure a good many of these serious structural curves.

**Henry W. Wilcox, Denver:** I have nothing further to add in regard to my particular paper, but if I may say a word on Dr. Packard's paper, even though he has closed the discussion, I should like to. The treatment of deformity, especially of the spine, is very important, but of far greater importance is the prevention of deformity, and it is especially in the middle and upper dorsal region where its importance is emphasized, because in this region deformity is of early appearance, much earlier than in the other regions, and also of rapid progression. It has been my privilege to follow the cases that Dr. Packard has under treatment at the children's hospitals by this method, and it is remarkable how, under this long-continued period of recumbency, these children thrive. Not only do they look well, but they are happy. When this method of treatment is proposed to the parents they invariably demur; they tell you that the child cannot be kept down on the back for so long. Within two or three days the child becomes accustomed to the new conditions and after that it is perfectly comfortable and happy. I think Dr. Packard's modification of the treatment which he spoke of, a plaster shell under the back is of especial importance. While recumbency is of the first importance, the better hyper-extension which is secured by means of this plaster shell is very important indeed and the disease certainly will progress toward recovery much more rapidly if the spine is properly hyper-extended.

Dr. Jones' paper on Paget's Disease was especially interesting to me. So little is known of it that the ordinary man cannot discuss it very intelligently. Dr. McCurden, in the Harvard medical laboratories, several years ago made some careful metabolic investigations on several of these cases and he found that the elimination of calcium salts from the various excretory organs was very markedly increased and that would tally with the X-ray findings in which the cortex of the bone seems to be markedly diminished in thickness.

**Dr. S. Fosdick Jones, Denver:** I think that the point emphasized by Dr. Packard in favor of recumbency in the treatment of tuberculous caries of the spine is of the greatest importance, particularly so in children. These children should be kept at rest, flat on their backs, using, as Dr. Packard suggests, a molded plaster-of-Paris frame in addition to the Whitman or Bradford hyper-extended, gas-pipe frame. The operative procedure in these cases occurring in children, certainly at the present time should not be attempted. In carefully selected adult cases in which the conservative treatment has failed, the operative procedures described by Albee of New York and also by Hibbs of New York may be attempted.

In regard to the cases of lateral curvature, we must divide these cases into two distinct groups; first, the so-called postural or functional curves which are cured by gymnastic



exercises, and, second, the structural, or fixed, curvatures of the spine which can only be cured by the application of corrective plaster-of-Paris jackets. The discussion of Dr. Wilcox's paper concerns only those cases referred to in the second group.

During the past summer I have had the opportunity of visiting Dr. Abbott in Portland and seeing the remarkable results he has obtained in the treatment of structural spinal curvatures. These cases have always been most difficult and the results previously obtained rather discouraging. In the Abbott method we have a means by which these rotary lateral curves of the vertebral column can be successfully treated.

### *THE PROBLEM OF THE MENTAL DEFECTIVE.\**

R. F. DARNALL, M. D., PUEBLO, COLORADO.

The problem of the mental defective in the home, in the school, in the street, in the police court, in the jail, in the brothel and in the asylum, constitutes one of the greatest sociological and economical questions of modern times.

A special census taken by the United States Government showed that on January 1, 1910, there were in the 372 institutions for the care of the insane, 187,454 patients. To the number given it is safe to say there may be added, of the chronic (more or less harmless) insane outside, a sufficient number to more than total 200,000.

According to one of the very best authorities, there are today more than 300,000 feeble-minded in the United States under eustodial care and at large.

Statistics show that there are 80,000 criminals now under sentence, and no one knows how many thousands not held in prisons. Of the class known as paupers there are more than 100,000. Of the blind, deaf and dumb there are 160,000, giving as a grand total more than 800,000.

It is estimated that the annual cost of this great number of defectives is approximately \$100,000,000.

\* Read at the annual meeting of the Colorado State Medical Society, September 25, 26, 27, 1912.

In this day of "Big Business" we hear much of millions, but more than a passing consideration is necessary to enable us to fully appreciate the significance of such terms.

With the amount mentioned it would be possible to build two most excellent trans-continental highways, 3,300 miles in length, each year.

The same amount would build and equip ten modern battleships of the largest type, and in ten years our navy would exceed that of all other nations combined.

If expended in the building of passenger steamers, ten of the Titanie type could be constructed every year.

Every three or four years the United States could build a Panama canal, and in ten years could own most of the great railroad systems of the country.

Such an excessive expenditure made annually is truly startling, yet the conditions which necessitate such an outlay are even more alarming. We ask ourselves why is this and what is the great cause or causes back of it all?

The etiology of the mental defective is extremely complex. Each of the many contributory factors act and react upon each other.

The factors commonly recognized are: Heredity, environment, alcoholism, drug addiction, syphilis, tuberculosis and criminality.

Heredity, to a very large extent, determines environment, environment in turn is the omnipresent influence which develops for good or evil all those traits which the child gets from the parent.

As a result of an acute psychosis there may be feeble-mindedness from mental deterioration. Not infrequently in the feeble-minded there develops an active insanity.

Drug addiction is usually associated with alcoholism. As a result of alcoholism



and drug addiction there may be insanity, feeble-mindedness or criminality.

Again, feeble-mindedness may be the cause of alcoholism, drug addiction or criminality, etc. The equations may be varied almost without limit.

In a class by itself stands heredity as a causative factor of the great class known as the mental defectives.

The studies of heredity and the startling deductions drawn from the Mendelian investigation seem to prove, that the insanities (excepting acquired insanity) feeble-mindedness, criminality and the like degenerative conditions are simply branches of one family tree—defect.

The modern intensive study of the family trees of individual degenerates, the insane, epileptics, criminals, prostitutes, hereditary paupers and feeble-minded, has emphasized the fact that these various conditions of degeneracy, are often merely different phases or expressions of the same fundamental inferiority.

In these degenerate families the form of defect varies from generation to generation, feeble-mindedness in one, pauperism or criminality in the next, and then some form of insanity, alcoholism, drug addiction, etc.

The recent exhaustive investigation of the family history of a very large number of feeble-minded, by Davenport, Goddard and Tredgold, show that in at least 80 per cent of these cases the mental defect had been preceded by other defect in the immediate family. And Goddard found that in 65 per cent of his institution cases one or both of the parents were feeble-minded.

In a very careful study of more than 11,000 cases of insanity, comprising all the different psychoses, heredity was found to have been an etiological factor in 54 per cent of the number.

Some of our best authorities state that heredity is a factor in 78 per cent of all cases of alcoholism. It is further found

that heredity is a factor in 68 per cent of all cases of drug addiction, and when we are confronted with the opinion of one of our most eminent specialists, that there are today, in the United States and Canada more than 1,000,000 people addicted to the use of drugs, the significance of the foregoing per cent is not to be forgotten.

Rosenoff presents the Mendelian theory as follows: The neuropathic constitution is transmitted from generation to generation, in the manner of a trait, which is recessive to the normal condition. The rules of theoretical expectation are:

First—Both parents being neuropathic, all children will be neuropathic.

Second—Both parents being normal, but with the neuropathic taint, from one grandparent, and the other parent being neuropathic, half of the children will be neuropathic and half will be normal, but capable of transmitting the neuropathic make-up to their progeny.

Third—One parent being normal and of pure normal ancestry, and the other being neuropathic, all the children will be normal, but capable of transmitting the neuropathic make-up to their progeny.

Fourth—Both parents being normal, but each with a neuropathic taint from one grandparent, one-fourth of the children will be normal and not capable of transmitting the neuropathic make-up to their progeny, one-half of the children will be normal, but capable of transmitting the neuropathic make-up, the remaining one-fourth will be neuropathic.

Fifth—Both parents being normal, one of pure normal ancestry and the other with a neuropathic taint from one grandparent, all the children will be normal, and one-half of them capable of transmitting the neuropathic make-up to their progeny.

Sixth—Both parents being normal and of pure normal ancestry, all the children will be normal and not capable of trans-

mitting the neuropathic make-up to their progeny.

According to the same theory of heredity, it is further stated that about 30 per cent of the general population, without being actually neuropathic, carry neuropathic taint from ancestors, and are capable under certain conditions, of transmitting the neuropathic make-up to their progeny.

Bicknel, in writing the history of 248 pauper families, gives his results as follows: Total number of persons making up these 248 families was 887, and of this number 562 were found mentally defective. In 101 of the 248 families there was found a history of feeble-mindedness extending through more than one generation.

Barr reports one family, where the head was only 38 years of age, yet during a period of twenty years he had become the father of nineteen defective children.

The State Board of Charities of Indiana has a list of 75,000 persons who have at some time been inmates of the 142 institutions of that state. From this number, 803 families were selected because of feeble-mindedness in more than one generation. The total number of persons in these families was 3,048, and of this number, 1,594, or 52.3 per cent, were mentally defective.

The genealogy of one of the most notorious families of our country shows that within a period of seventy-five years from one criminal degenerate man there resulted 1,200 defective descendants.

This family alone cost the state of New York \$1,000 for each of the defectives, or a total of \$1,250,000.

In the end of the eighteenth century a woman died, who for forty years had been a thief, a tramp and a drunkard. From this one woman came 834 descendants. Out of this number 707 were traced from youth to old age. Of these 106 were born out of wedlock, 142 were beggars, 64 lived on charity, 181 of the women were prostitutes,

76 were convicts and 7 were murderers; during a period of seventy-five years this family cost the German government one and a quarter millions of dollars.

Another striking instance of the force of heredity, in 1782 a young man of normal family wronged a feeble-minded girl. She gave birth to a feeble-minded son, and this son became the father of thirteen children, seven of whom were idiots; one of his feeble-minded sons married a woman of like mentality, and all their children were idiots. The total number of descendants of the original, illegitimate, feeble-minded son, 1,146, of these 580 were mentally defective, many were criminal and others epileptic.

That like begets like is conclusively proven in the case of this young man who afterward married a woman healthy in mind and body. Nearly 1,000 of their descendants were traced, and not a single mental defective was found, showing that beyond doubt that the transmission of degeneracy from the first union came entirely from the feeble-minded mother.

Of the 300,000 feeble-minded in the United States, less than 40,000 are under supervision.

Every mental defective, not in custody, is a human derelict, floating about upon the social sea, always in the direction of least resistance, by nature totally powerless to withstand the physical temptations of adult life.

Feeble-minded women are almost invariably immoral, and if at large, become the carriers of venereal disease and give birth to defective children. As a class they are more than twice as prolific as normal woman.

In an Eastern county infirmary within a period of six weeks, eight women gave birth to as many feeble-minded children, and in the same institution, during a period of five years, 105 children were born, and of these 102 were feeble-minded.

In a Pennsylvania almshouse there were 105 mothers of illegitimate children, and of these mothers, 100 were feeble-minded.

In an Eastern detention home an examination of the 100 youthful inmates showed that 66 were mentally defective. In a reformatory 52 out of 56 girls examined were found to be feeble-minded.

As a result of recent investigation it has been found that at least 12 per cent of the children in our public schools are mentally defective and incapable of taking their place in society.

Applying this ratio to New York City, we would find that there are 15,000 feeble-minded children in the public schools of that city.

Every mentally defective person, especially the high-grade imbecile, is a potential criminal, needing only the proper environment and opportunity for the development and expression of his criminal tendencies. The unrecognized imbecile is a most dangerous element in any community.

One noted penologist states that 70 per cent of criminals are so by instinct, commonly called born criminals.

In the United States 32,000 are annually sentenced to our state and national prisons, and nearly as many, by pardon and expiration of sentence, are annually released; with the freedom of this great number begins anew the reproduction of their kind.

In the response which comes from every state for more room for the defective classes, extreme means are put forth to meet the ever-increasing need; that provision may be made for the acute insane (too many of whom are held in jails awaiting hospital care) hundreds of patients are annually sent out as soon as they are convalescent, or as soon as they may be looked upon as legally sane; they return to their home, to resume their former family relations, with the result that more children are brought into the world, who if not ac-

tually insane, possess the so-called neuro-pathic make-up and capable of transmitting to their progeny any one of the many mental defects.

It was the hope of pioneer teachers and sociologists that many mental defectives could, by education and training, be developed to the point of being self-supporting. This hope, however, has never been realized, for while some have become (under supervision) to a degree self-supporting, none have ever become self-controlling.

During the past fifty years thousands of mentally defective children have been educated and trained in institutional schools, in special schools and under private teachers, with every advantage that experience and money could provide, and yet there is not a record of a single case where the child (mentally defective) has ever been restored to a normal mentality.

All degrees of congenital mental defect, from the high-grade imbecile to the profound idiot, are a result of certain definite structural imperfections, or an inferiority of the brain caused by brain disease or injury. These brain abnormalities are permanent conditions, and are as essentially peculiar to the individual as is the color of his eye, the shape of his head or the type of his face.

The child that is born mentally defective is always mentally defective. The child that is born with criminal tendencies will always have these tendencies. How great a criminal he will become will depend largely upon opportunity; his conduct is only the normal response to an abnormal brain.

There is a strange significance in the fact that while it is easily possible for parents of normal faculties, through dissipation, vice or disease to produce mentally defective children, there seems no method by which the tendency, once started, can be reversed and the degeneration, so easily accomplished, be displaced by a restoration



to the normal in succeeding generations. Truly—

“The sins of the parents shall be visited upon the children, even to the third and fourth generation.”

As stated by DuBois, “Whatever is innate within us, comes to us as a legacy from preceding generations. We know it exists; we cannot escape it, yet we are not responsible for it. The physical and mental characteristics we inherit from our parents, modified for good or ill by our environment, become a certain heritage for those who come after us.

Our national government is annually appropriating millions of dollars for the Departments of Agriculture and Animal Industry.

Experiment stations are being established and maintained, in many parts of our country; hundreds of experts are employed to give their time to original research work, so that you may have at any time for the asking a special bulletin, the most recent data along the lines covered by these departments. You are given scientific advice as to the value of selective breeding and care of any of the varieties of the horse, hog, cattle, sheep, poultry, etc., etc.

You are also given advice relative to the selection of grains, fruits, vegetables, flowers, trees and shrubs, what climate and soils are best adapted, etc., etc.

If a new disease appears among the stock, or a new insect, scale or blight attacks the grain, fruit, flowers or trees, the alarm is sounded; word is at once sent to all stations and sub-stations, as to what can and must be done; quarantines are established, and often a governor of a state will issue a special message, and why? Because all these things are of great money value to the people of our land and contribute largely to our national wealth. We are all proud of the success of these departments.

But who has yet heard of any special

bulletin being sent out, giving scientific advice as to the importance of selective breeding, care, etc., etc., of human stock.

We are today as a nation suffering from the ravages of a condition more serious than disease, insect or scale; it is the blight of the mental defective, yet our national government is not sounding an alarm or offering any assistance.

Never before in history has society responded so generously to the needs of her defective classes

But is there not a question that in our impulsive response we are acting blindly and to no ultimate relief?

Thousands of mentally and physically unfit are coddled from the cradle to the altar to become parents of invalid families, and these in turn are protected and cared for until they shall reproduce and fasten their infirmities upon future generations.

There is an undoubted increase of the unfit stock, while for prudential or other reasons the present birth rate of the better classes barely suffices to replace the loss by death.

Pearson estimates that one-fourth of each generation produces one-half of its successor, this means that the death rate and the marriage rate remaining the same as they are now, 12 per cent of all the individuals born this generation will beget one-half of the next. From this we must conclude that the double contribution comes from the classes which are looked upon as undesirable.

These statements of facts thus obtained should be sufficient to cause us to stop and consider the inevitable conditions of the future, for it is clearly shown that in the misguided protection of its pathologic stock our nation courts its own downfall.

The inadequacy and inefficiency of the existing system of dealing with the problem of the unfit, can not longer be doubted, for despite all that has been done in the way of curative, preventive and corrective

measures, the evil is rapidly spreading wider and eating its way deeper into our national life.

The experience of the past offers no hope of the conditions of the future if we go on as we are going. The heritage of evil which by our present system we transmit to posterity is appalling to contemplate.

During the last fifty years the population of the United States has increased 138 per cent, while the increase of the insane alone has been 300 per cent, the feeble-minded and other defectives have increased with an equal ratio out of all proportion to the increase of population.

In England and Wales during the past fifty years the population has increased 85 per cent, while insanity has increased 282 per cent, feeble-minded and other defectives not included.

Is it not opportune that some positive and concerted action be taken to counteract such an alarming and world-wide condition.

In our own country the question of immigration is a very important one. In many of our states more than one-third of the defective classes are either foreign born or one generation removed. We should have laws to restrict immigration, only known desirable classes received; those becoming for any cause public charges within one year should be deported without delay.

More stringent marriage laws, which have been passed by some states, are unavailing, as are also the efforts of moral and religious codes to control irresponsibles, for, unfortunately, marriage is not essential to procreation, and since defectives are not guided by moral standards, the deterring effects of such laws is practically nil. When enforced they too often add illegitimacy to degeneracy and leave the child doubly handicapped. The ease with which the maintenance of a child is shifted

to the state renders the parents free to repeat their delinquency.

Some authorities are much impressed with the segregation or colonization of defectives. They claim that under the compulsory education law, all children now come to public attention when they enter school. That placed in colonies, which are in reality well-regulated communities, where these people do all the work they are capable of doing, and live under conditions that are easy for them, because simplified by persons of intelligence who manage the colony, these children become happy and harmless. A great many of them are trainable to do many things with their hands; they can do much of the work of the colony and become partially self-supporting under direction. This is more than they could ever do if free in the world, and, further, they are kept from propagating their kind. It is further argued that we are not only planning for the future of these children, but the moment that we begin to care for them, we shall reduce our expenses for courts, prisons and almshouses and save the moral injuries that come from the example of these people and the prevalence of so much crime committed by them.

While the plan suggested looks at first feasible, there are some serious difficulties to be overcome.

In the matter of the cost of the colonization idea, the magnitude may be shown by reference to New York City, which alone is said to have 15,000 mentally defective children.

Institutional experience shows that 1,000 people under one management is much more satisfactory than is a greater number, while some authorities claim that 500 in one community is enough, for New York City, which would mean fifteen to thirty new colonies for defectives.

Another difficulty as great, if not

greater, lies in getting these children into the colonies.

The majority, indeed, the dangerous part of them are not idiots, so-called; that is to say, they are not of so low intelligence that every one, the parents included, is convinced of their defect and is willing to have them placed in different colonies.

On the contrary, many of them are what are known technically as morons, or very high-grade defectives, who many times do not show to the satisfaction of the parents that they are defective until they are adults in years and attempt to take their place in the world. The result is that the parents are altogether unwilling to have their children placed in these colonies.

Carrying the segregation idea still further, it has been recommended that every feeble-minded or criminal female, whether of school age or not, be taken in custody and maintained by the state in which she lives, until she shall have passed the procreative period. While this plan has merit, the cost through increased taxation would cause it to be looked upon with disfavor. And again, this plan would entirely ignore the great army of male feeble-minded and criminal who are to be found broadcast over the land, ever ready to start a long line of defectives by a union with one of their own kind, or by the poisoning of normal blood.

Another remedy for this great problem, and one which to my mind offers the best solution, is sterilization.

By this is meant vasectomy for men and salpingectomy for women. Vasectomy is a simple operation, frequently done without even a local anaesthetic and causes a very temporary disability. It does not deprive the man of sexual desire nor pleasure, but it does deprive him of the means of impregnation.

In Indiana about 1,000 have been sterilized by means of vasectomy, with the result, as given by those who have performed

these operations, that mental stamina is increased afterward and that physical as well as mental benefit is derived.

One of the greatest surgeons of our country is the authority for the statement that salpingectomy is for the women as safe, effective and in every way as acceptable as is vasectomy for the man.

The results of salpingectomy are just as gratifying as from vasectomy. The idea is not to be entertained that any one of the so-called undesirable changes in disposition or temperament may occur which sometimes follow double oophorectomy.

If effectively sterilized, many of the chronic quiet, more or less harmless insane, could be removed from hospitals and placed under custodial care outside at much less expense to the state. Many feeble-minded who have spent a number of years under instruction in special institutions could be taken home and become an asset to their parents because of their training, and with no possible danger of reproduction of their line.

If the unfit are sterilized, the question of the right of marriage will thereby be greatly simplified.

It is not unreasonable to believe that two of the higher types of defectives might live happily together as man and wife, and be no more dangerous to the community than if unmarried, and possibly less.

Some of the advocates of vasectomy and salpingectomy do not hesitate to contend that in four generations they would by this means wipe out nine-tenths of the insanity, degeneracy and crime in our land.

Whatever the means employed to enforce it, prevention seems to be the essential in any scheme for lessening the numbers of the degenerate.

Whatever the sentimental objections that may arise regarding the rights of the individual, the situation resolves itself into sentimentalism and the generation of the un-



fit on one side and the prevention and regeneration of the race on the other.

Not until the state assumes and exercises full control over the lives and destinies of its unfit will the burden ever grow lighter.

As a result of my observation, experience and study of this subject, I wish to offer as a general conclusion that the following classes should be sterilized:

First—Every case of epilepsy or feeble-mindedness of whatever age, as soon as the defect is proven.

Second—Every case of confirmed alcoholism or drug addiction.

Third—Every case of insanity upon second commitment.

Fourth—Every criminal upon second conviction.

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#### Losing Faith.

Old Lady—"I don't believe this sure cure tonic is a-goin' to do me any good."

Friend—"It's highly spoken of in the papers."

Old Lady—"Yes; but I've taken forty-seven bottles, and I don't feel a bit better. I tell you what it is, Sarah, I'm beginning to think these newspaper editors don't know everything."—*New York Weekly.*

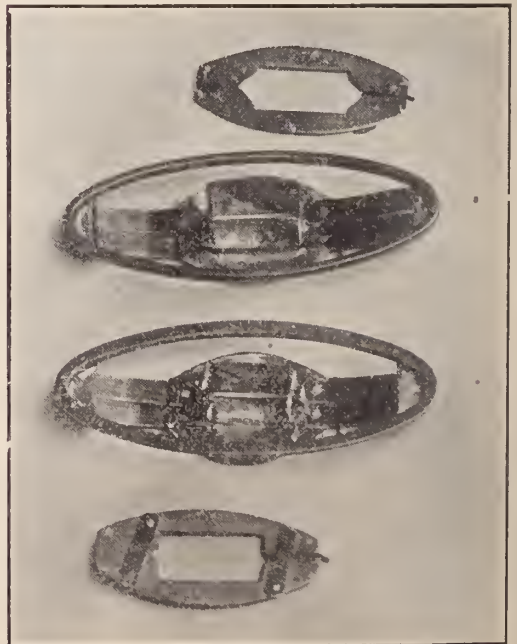
## A DEVICE FOR INTESTINAL ANASTOMOSIS WITHOUT SUTURE.

FRANK N. COCHEMS, M. D.

SALIDA, COLO.

While all mechanical devices for intestinal anastomosis are to a greater or less degree objectionable, yet there come times when some quick means of making a union is almost invaluable, and especially is this true in cases where an operator is not an adept in the use of some suture method. This device hopes to fill this want, believing that it is some improvement on the Murphy button.

The principles of the device constructed were conceived by myself, and the details worked out and carried out by my friend Mr. N. C. Figley. The device is on the lines of the Murphy button, but I believe it is an improvement on this button, because it absolutely eliminates the use of suture, can be applied more quickly, can be made lighter and the edges between the rims of the button can be more uniformly brought together. The instrument is simple, con-

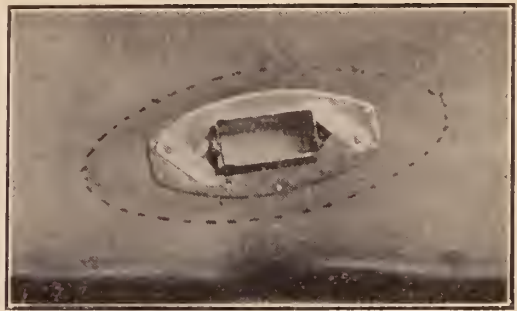


sisting of four parts, two of which are like modified halves of the long Murphy button. The other two parts are simply plates, with pins so set as really to take the place of the sutures in the Murphy button. When the halves of the button are in place, with the plates firmly drawn down, they are held by a small arm firmly to the intestine and cannot slip off, as it is so likely to do when one-half of the Murphy button is placed with its purse-string drawn tight.

Every one who has used the Murphy button has no doubt found that, after placing one-half of the button, even with the purse-string tight, the half must still be held with some instrument so that it does not slip away into the cavity of the intestine. The half is usually held by a clamp, and attention has been called to the fact that the clamp often, in gripping the post of the button distorts it so that the button will not lock, making it valueless or dangerous.

The incision in the walls of the intestine need not be as large as is required in the use of the Murphy button; on account of the shape of the new device and because of the small size of the opening, it is possible to cover the incision with the little plates so completely that one can see, before approximating the two halves, whether any portion is exposed or no.

Once the halves are properly placed, the surface to be engaged by the outer rims of the button are perfectly smooth, making for absolute certainty of union. All operators who have used the Murphy button no doubt at times have so placed their



purse-string sutures as to include too much of the intestinal wall. The result is that, when the two halves of the Murphy button are brought together, there is more or less protrusion of the cut wall of the intestine between the edges of the button. Naturally this does not make for a perfect union, and often requires added sutures on the outside, which must naturally be under considerable tension, in order to approximate the peritoneal surfaces which are likely to cut and sometimes weaken, rather than strengthen, the proposed line of union.

The pictures of the button and the parts, as shown, are self-explanatory.

*DANIEL J. SCULLY.*

We are again called upon to mourn the loss of one of our favorite members. Colorado Springs has many favorites and Dr. Daniel J. Scully stood in the front rank. His smiling face and outstretched hand always made us feel at home in his presence. He was ever ready to put himself out to provide entertainment for us, his friends. We all liked him and to think of never being able to see him again is hard to bear. Our deepest sympathy is extended to his relatives, to whom he must have been very dear, indeed. It is to be hoped that the Old Reaper will cease his operations in Colorado Springs, at least until we can become reconciled a little to the loss of Gildea and Scully.



## CLOSURE OF THE ABDOMINAL WOUND AFTER CELIOTOMY.

*With Report of a Case of Chronic Mem-  
branous Pericolicitis.*

W. W. GRANT, M. D.  
DENVER, COLO.

It is needless in a brief paper, to discuss the older method of closing the wound by through and through interrupted stitches, alone, for it is practically abandoned for the improved technic of closure in layers, according to the tissues involved, and with modifications of technic, as the experience and judgment of the operator may suggest. I will describe in the case presented, the method I have used for many years, with an interesting clinical history and pathological appendix.

Mr. F. M., aged 23 years; single; occupation, barber. Family history tuberculous. Had suffered for three years from stomach dyspepsia, in the form of irregular appetite, eructation of gas and tenderness of the epigastrium. No nausea or vomiting, and at no time pain or tenderness in the *hypogastrium*, nor over the gall bladder. For three months prior to operation he was under the care of Dr. J. N. Hall. Shortly before the abdominal operation I was called to operate upon him in an emergency for a phimosis, not specific, that was obstructing the passage of urine. At this time he asked me to examine his abdomen, as he felt certain that he had some serious trouble with his stomach. I did so and could find on analysis of his case history no satisfactory evidence of organic disease of any viscera. I then conferred with Dr. Hall, who had made analysis of the stomach contents, which was negative except as to hyperacidity. After a second examination I advised an exploratory operation, the patient having lost weight steadily and had not the slightest pain on palpation, except in the epigas-

trium. Yet he was advised that a chronic appendicitis, with other symptoms, might be the cause of his illness. Dr. Hall coinciding, I operated upon him at St. Joseph's hospital on October 4, 1912, by making an incision three inches long through the right rectus, the lower end one inch below the level of the umbilicus; divided the fascia over the muscle and pulled the latter to the outer side instead of going through the muscle, entering the peritoneal cavity directly behind the muscle, the blood and nerve supply to muscle not being disturbed by this technic. Through this incision the viscera can all be examined satisfactorily. It was immediately manifest that the liver and gall bladder were perfectly normal. Pulling the stomach well into the wound, a careful examination showed no ulcer of the stomach or duodenum, no constriction of the pylorus and no dilatation whatever of the stomach; the organ was, in fact, smaller than usual. No gastropnoxis nor enteropnoxis existed, although the patient was mildly neurasthenic and slightly anemic. Lastly, the caecum was brought into the lower angle of the wound—the appendix retrocaecal, longer than normal and doubled on itself throughout, in the shape of a horseshoe, and tightly distended. Mild adhesions existed, as shown in the exhibit; adhesive cobweb bands are seen stretching across the mesentery from one side of the organ to the other. It is interesting to note how such a condition could exist without giving rise to a single local symptom or manifestation throughout the patient's long illness except epigastric symptoms. That it was the chief cause of his stomach symptoms and loss of flesh, can hardly be doubted and he has steadily improved in flesh since, while the epigastric disturbance has almost entirely disappeared in six weeks from the operation.

I closed the abdomen as I usually do in a clean case, by first uniting the perito-



neum with a running stitch of simple cat-gut, then the fascia with a running stitch of No. 1 chromicized gut, and the skin with a subcuticular silkworm gut. When the incision is three inches or more in length, or in a curved line, I always make a through transverse stitch about the middle and then continue it as a subcuticular. When ready to remove it—in ten to fourteen days—it is easily done by clipping the over-exposed loop in the middle and extracting each half from the ends of the incision. This method of uniting the different layers of tissue makes accurate apposition, though the fascia, the most important of all in preventing hernia, is often overlapped, and in a long incision, in a vulnerable part, is best supported by an extra, or figure of eight stitch, with an occasional inclusion of muscle fibers. The subcuticular stitch makes a more accurate approximation of the skin and leaves a smaller scar than any other method. Furthermore, when the stitch is removed, I always cover the line of incision with gauze at least an inch wide, or cotton, wet with flexible collodion this is kept on for two or three weeks and assists in preventing spreading of the resulting scar. This stitch penetrating the under surface only of the *cutis vera*, makes a perfect, uniform approximation of the sides of the incision. The stitch should not be removed under ten or twelve days. In fat abdominal walls I generally insert a few supporting stitches which do not include the peritoneum. They are brought out at least one-half inch from the skin incision and tied (after the other stitches are in place and fixed) over a roll of sterile gauze thick enough to prevent cutting of the skin by the stitches, while at the same time it makes firm pressure over the line of incision. A small strip of rubber tissue or strands of horsehair, extending from the fascia through the inferior angle of the wound, is often advantageous for a few

days' drainage, in weak, fat walls. I have used this procedure for years in this class, and also when there is reason to anticipate coughing or severe vomiting, it is a wise precaution. In infected cases where drainage is used, I make it a rule to close the peritoneum muscles, fascia and skin close to the tubes; under these precautions, the hiatus existing when the tube is removed is rapidly closed by the surrounding tissues. By such care and attention to details in the operation, and in the post operative management, I have not had a resulting hernia in twenty years.

In this connection it seems appropriate to mention the occasional *spontaneous* reopening of the abdominal wound, from the fifth to the tenth day, after operation, usually, without pyogenic or other manifest local evidence of infection. It occurs generally in the middle line of the abdomen, and more frequently between the umbilicus and the ensiform cartilage.

Robert T. Morris, in a paper on this subject before the New York Academy of Medicine suggests that it is probably influenced by enervation due to the theory, or fact, that the epigastrium represents a nerve zone in the form of a triangle with its base at the midline. Defective metabolism due to nerve trauma, might therefore interfere with satisfactory union of the parts. The fact that it seldom occurs in the muscular wall of the abdomen, which is more highly organized tissue, and better supplied with blood vessels and nerves, would lend support to the theory.

There is probably little reason to doubt that such patients are in a bad general nutritive condition from sepsis or other debilitating causes. The hurried, imperfect closure of the wound may play a part. It suggests, at least, the wisdom of making the incision, in weak subjects, especially, through tissues endowed with good blood and nerve support.

The pathology in the case presented is

more than ordinarily interesting. In view of the doubtful clinical history as to disease of the intestines. It belongs to the class that is now exciting the particular interest and attention of internists, surgeons and pathologists, and is described as chronic membranous pericolicitis. It was this delicate membrane that was observed stretching across a long appendix, that caused and maintained the organ in its dangerous angular condition. The cæcum was partly, but delicately, covered with it. There was no mobile cæcum of Wilms, nor was the Lane kink present. The diseased appendix seems to have been the chief cause of offense in this case.

The etiology is unsettled. The condition was first well described by Jackson of Kansas City and Lane of London in 1908. Pileher, Coffey, Mayo, Harris, Gerster and other surgeons have written about it recently. It is more familiarly known as Jackson's membrane. Some surgeons think the condition is due to congenital defect in the rotation and descent of the colon. Gerster and Pileher ascribe it to a mild, slow infective process from chronic colitis and intoxication. This view appeals to one as the most rational explanation of its progress in *adult* life, and its frequent association with disease of the appendix. In time the adhesive bands become more highly organized and may result in constriction, angulation and the Lane kink. General visceral ptosis not associated with an inflammatory condition is generally preceded by a debilitated neurasthenic condition, with usually constipation and long-standing disorder of the intestinal tract.

In the case reported, I did not remove the membrane from the intestine. There were no constricting, adhesive bands. When the bands are of such firmness and character as to produce angulation, stricture or dislocation of intestines or other organs, they should always be divided or removed. It is doubtful if the general or systematic

removal of the membrane is necessary or justifiable.

\* \* \* \* \*

Since the foregoing article was written, I have had the pleasure of listening to a most interesting paper on this subject by Rilus Eastman of Indianapolis, before the Western Surgical Association at Cincinnati.

In examining fœtuses and reviewing the literature of the subject, he concludes that about twenty per cent. after the seventh month will exhibit this membrane or condition, which is analogous to the parieto-colic fold of Jonnesco and Juvara, and that Lane's ileo-pelvic band and the bloodless fold of Treves are a part, at least, of the genito-mesenteric fold of Douglas Reid. The conclusion seems inevitable that the condition is congenital and that the subsequent pathological states of later life, which demand consideration are due to infective and chronic inflammatory disorders of the intestines.

## News Notes

In the June issue of *Colorado Medicine* there appeared an article by Dr. Frank W. Kenney entitled "The Complications of Typhoid Fever and the Later Day Treatment of Same, with Report of Case." There were some typographical errors in this paper for which the author must not be held responsible. For a month preceding the publication of Dr. Kenney's article, while it was standing in type awaiting its author's approval, Dr. Kenney was traveling in China and Japan. The paper did not receive, therefore, the very careful reading that it would otherwise have had.

Dr. B. L. Jefferson, formerly of Steamboat Springs, but more recently a member of the State Land Board, and a resident of Denver, has been appointed minister to Nicaragua.

Drs. John B. Polly and Katherine C. Polly, of Cripple Creek, have sold their practice to Dr. Anna Brown, formerly of Telluride. The Drs. Polly will, after a while, locate in Denver.

Dr. Albert W. Killgore, for twenty years a resident of Fort Collins, died on June 23 of acute endocarditis.

Dr. Alpha J. Campbell and Miss Lucile Arthur were married in Denver, June 23. The honeymoon was spent in an automobile in the mountains of Colorado.

Dr. Clinton H. Catherwood died in Denver July 2. Dr. Catherwood was, for a long time,

an invalid and was able to engage but sparingly in professional work. He graduated at Dartmouth in 1895.

Dr. Joseph B. Roberts of Palisade is in a hospital at Grand Junction, a victim of Rocky Mountain spotted fever.

Dr. Eliot O. Sisson died in Denver July 5. Dr. Sisson had lived in Denver for ten years. He was especially interested in ophthalmology and was, for a time, secretary of the Colorado Ophthalmological Society.

Dr. W. J. Wiley of Eagle is reported to have found a rich vein of silver in Castle Mountain.

Dr. A. E. Gill, secretary of the Garfield County Society, has removed from Gulch to Carbonade.

The Physicians and Surgeons' Club of Denver has elected the following officers: President, Dr. H. C. Brown; vice president, Dr. F. G. Byles; secretary, Dr. C. E. Cooper.

Dr. Howard A. Kelly spent some time in Colorado in June looking for possible sources for a supply of radium. He has the largest amount of radium owned by anyone in the world. He purposes starting an institute for experimentation for determining the therapeutic properties of the metal. On June 12 Dr. Kelly was in Denver and was entertained at luncheon by Dr. C. B. Ingraham, who had invited about twenty-five physicians to meet his former teacher.

Dr. Oscar D. Hayes has been appointed deputy health commissioner of Denver by Mayor J. M. Perkins.

The members of the El Paso County Medical Society were recently the guests of Dr. Rutledge at the Sanatorium of the Modern Woodmen of America. An extensive clinic on tuberculosis and a good dinner made the occasion instructive and pleasant.

The newspapers announce that it required the entire time of three Pueblo physicians for a whole week to decide an "ankle contest" recently promoted by a shoe house in Pueblo. Who the three physicians were the reports do not reveal. Here are the measurements of the modern Venus de Pueblo according to medical selection: ankle,  $8\frac{1}{2}$  in.; calf, 13  $\frac{11}{16}$  in.; tape to tape, 9 in.; hips, 32 in.; bust, 36 in.; height, 5 ft.  $2\frac{3}{4}$  in.; weight, 129 lbs.

Dr. Alex. C. Magruder of Colorado Springs has been appointed a member of the State Board of Medical Examiners.

Dr. Sol Ringolsky, formerly of Denver, has returned from an extended trip in Europe and has located in San Francisco. He will limit his work to diseases of the stomach, intestines and diabetes. His address is 240 Stockton street.

Dr. Carroll Edson attended the twenty-fifth reunion of his class at Harvard. Later he made an extended visit with his mother at Dorchester, Mass., and then went to Europe.

Dr. Burgin of Delta is an accomplished ventriloquist and while on the Gunnison this week kept the fishermen startled by strange voices apparently coming from bushes or rock crevices. One party spent several minutes looking for a drawing man whose cry for help appeared to come from a swift current around a

nearby bend. Dr. Burgin gets much amusement from his talent in this way.

A reliable man wanted to take charge, under my supervision, of a contract practice in southeastern Colorado. The location is on the main line of railroad and should pay, with outside practice, \$1,800 a year. H. S. C., Colorado Medicine.

Partnership or Associate. A member of American Academy of Medicine, A. M. A., Western Surgical Association, American Roentgen Ray Society, age forty-two, who has been doing major surgery for ten years, has had an extensive experience in radiography and is competent in systoscopic work, desires to change his location to Denver or Colorado Springs for the educational advantages for his children. Prefers an associationship to a partnership. Anyone interested can obtain my name from the editor of Colorado Medicine and write or interview me in perfect confidence.

Dr. T. H. Hawkins and wife have returned after a sojourn in Europe extending over almost two years. In spite of a serious experience with his eyes and some sickness that Mrs. Hawkins suffered the benefit of the trip overbalanced the wear of misfortune. The doctor is looking well.

Dr. Ranulph Hudston and wife returned to Denver on July 4. They have been away since last October. The greater part of their absence was spent in England and Scotland, where Dr. Hudston did post-graduate work in obstetrics.

## Constituent Societies

### LARIMER COUNTY.

**Larimer County Medical Society.** Special meeting June 26, 1913, called for the purpose of taking action on the death of Dr. Albert W. Killgore. Met in Dr. E. Stuver's office and unanimously adopted the following resolutions:

Whereas, An all-wise Providence has removed our brother and confrere, Albert W. Killgore, and

Whereas, Dr. Killgore was one of the old-time physicians of Larimer county and Fort Collins and enjoyed the esteem and respect of his fellow physicians and the public, be it therefore

Resolved, That the Larimer County Medical Society hereby extends to the bereaved family its sympathy for their irreparable loss, and it is hereby further

Resolved, That a copy of these resolutions be presented to the family and that they be spread on the minutes of the Larimer County Medical Society.

W. A. KICKLAND, }  
Signed: J. E. DALE, } Committee.  
E. STUVER, }



## MONTROSE COUNTY.

The Montrose County Medical Society met June 12 at the office of Drs. Didrickson and Spring. There were in attendance and answering to roll call President C. G. Brethouwer, F. G. Didrickson, F. Schermerhorn, S. H. Bell and Secretary J. Q. Allen. Dr. F. G. Didrickson read a paper on "The Practical Use of Vaccines." A general discussion followed. The paper was up to date and while conservative in tone brought out many practical points. The Society then adjourned to September 11.

J. Q. ALLEN,

Secretary and Treasurer.

## Correspondence

To the Editor of Colorado Medicine:

It is not the intention to point a moral nor yet to preach a sermon. But more to illustrate an old adage that it takes all kinds of people to make a world. With so much evidence about us, on every hand, of the keen competition in our profession as well as in business life generally, it rather has a tendency to make us look sharp and be confident that we are well prepared to defend our opinions and to be clear in judgment when we clash with opposition, whether it be men of other schools, our legal brethren or the members of our local society with whom we may differ in a friendly discussion. In any event one should be well armed and this can be accomplished in no better way than by meeting with others in county, state and national meetings, and by post-graduate work. But what of the pretender, who does, or rather, apparently does these things—with the exception of attending medical meetings, there he is never seen—though usually in good standing. But he does travel—and he volunteers the information that he has visited all the great medical centers—London, Berlin, Paris, and so on. He displays with ostentation certificates in all branches of medicine and surgery, and with these he adorns his office walls. In the reflected glory of his "diplomas" he sits and expatiates on the tributes heaped upon him by great universities of Europe. If rumor be true, quite trustworthy evidence may be produced, we have one great certificate-collector in our own fair city who tells his patients that all of his "diplomas"—and it is said he has quite a few—were given to him without examination or his having to attend any of the courses specified, as he was told there was nothing they could teach him and they were honored in having him stop with them. He also explains to his listeners that an examination and attendance is required of the ordinary individual before receiving their diploma. Now, many earnest and sincere men take post-graduate work, and rightfully earn certificates for special work done. And if they

wish to hang them on their walls—that is only a matter of personal opinion. But the fact in these cases is that they were worked for, and the holders are entitled to them and all the credit that may be associated with them. But when a man can take a "flying trip" and, without attending any of the clinics or other courses specified in his certificates and without undergoing the ordeal of passing any of the usual requirements, returns with a score of certificates or diplomas, one should not be condemned for asking "how one small head could carry all he knew." The thought comes again: how is one to know, in a given case whether the certificate has been earned—or "bought and paid for"? A. J. SIMPSON.

## Book Reviews

**The Modern Hospital**, by John Allan Hornsby, M.D., Secretary Hospital Section A. M. A., etc., etc., and Richard E. Schmidt, Architect, Fellow American Institute of Architects. Cloth, \$7.00; half morocco, \$8.00; 644 pages; 207 illustrations. Philadelphia: W. B. Saunders Co., 1913.

A work which fills a real need, covering in a most interesting and readable manner hospital inspiration, architecture, equipment and operation.

If this book would be read and its contents digested by everyone having to do with hospitals there is no doubt but that many needed improvements in hospital construction and operation would be initiated.

It is not only a work for superintendents, but one which can be most profitably read by the physician or surgeon, by the heads of departments and above all by members of hospital boards and committees.

Unfortunately most hospitals in this country are managed, or, rather, mismanaged, by a board of directors who do not "give personal attention to the conduct of the institution for which it is to be held responsible"; by boards of directors and even superintendents whose only qualifications are those of a social or political character, or by members of the medical profession who unfortunately have widely varying ideas, some good, some bad, concerning hospital construction, equipment and operation.

These all will find this volume of rare interest, full of practical working suggestions which if carried out will prove of lasting benefit to their institutions and the patients treated therein.

A chapter devoted to "noise" in the hospital building and methods for its elimination would be of value. As we usually see and hear them electric bells and buzzers mentioned under "Signalling Systems" should have no place in the modern hospital.

It is to be hoped that this volume will find the place it deserves and bring forth some good in the constantly increasing interest being manifested in hospital architecture, equipment and operation. CUTHBERT POWELL.

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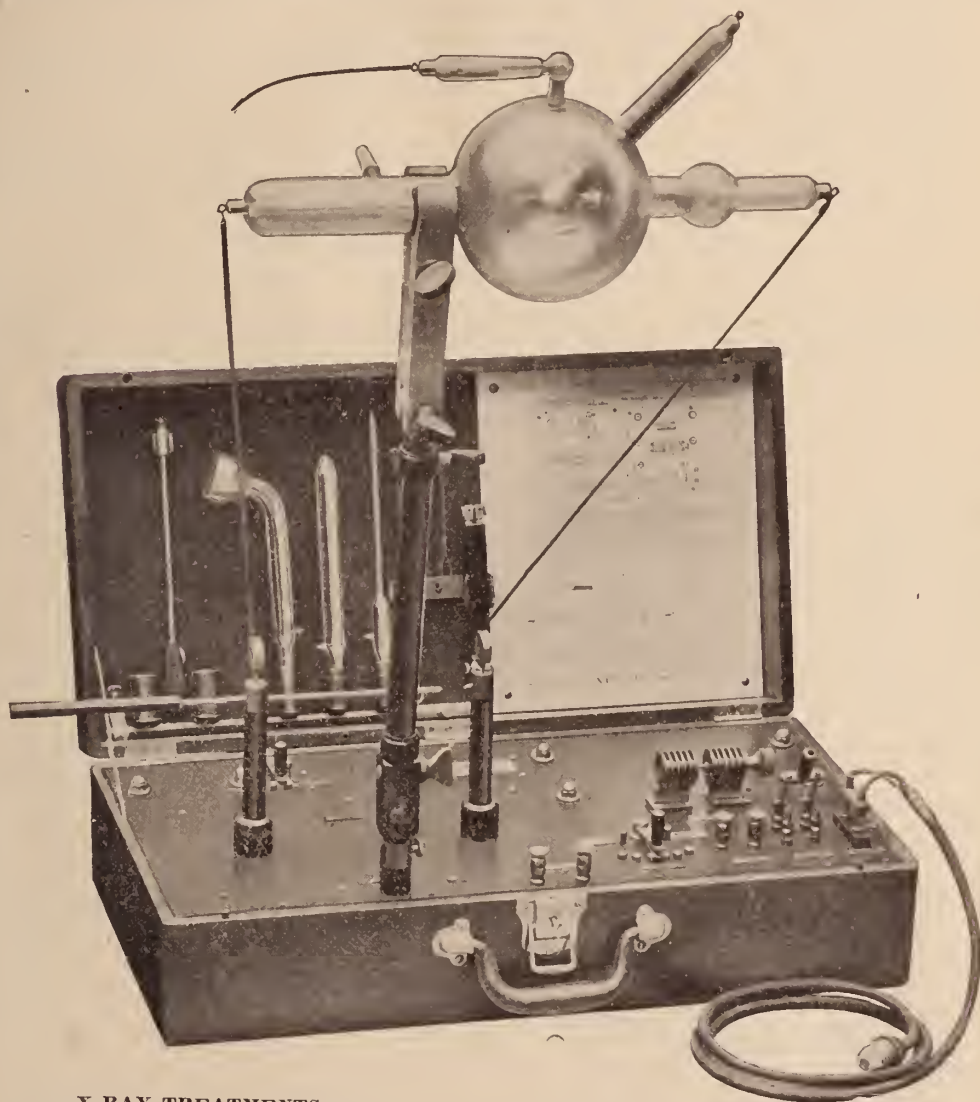
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New York Academy of Med.  
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Term expires.

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## Secretaries.

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Clear Creek County.....	A. D. Fraser, Idaho Springs
Crowley County, second Tuesday of each month.....	J. E. Jeffery, Ordway
Delta County, last Friday of each month.....	W. Scott Cleland, Delta
Denver County, first and third Tuesday of each month.....	Wm. M. Wilkinson, Denver
El Paso County, second Wednesday in each month.....	J. H. Brown, Colorado Springs
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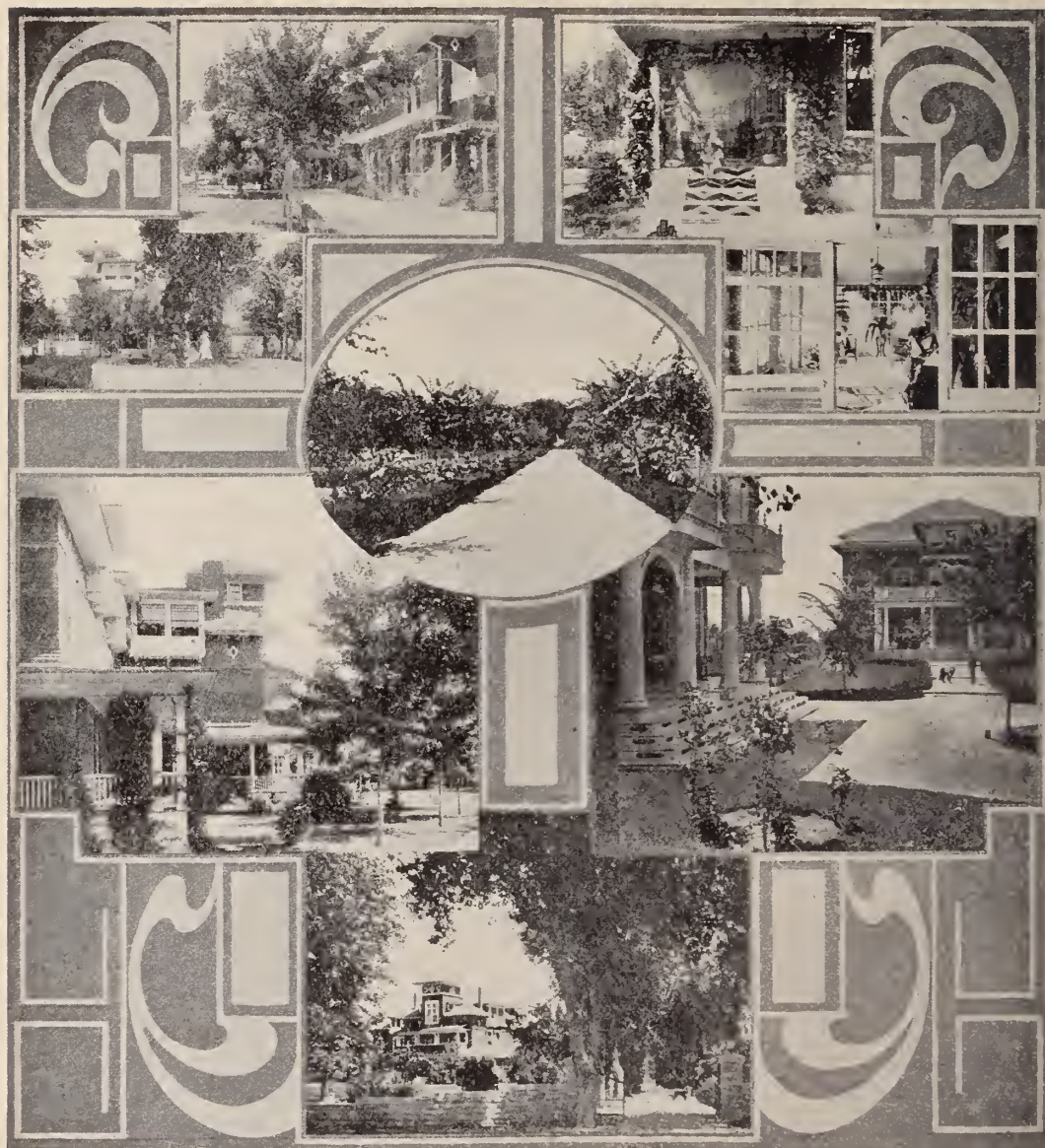
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## Editorial Comment

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### ANNOUNCEMENT.

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The September number of Colorado Medicine will be very largely devoted to advertisement of the next meeting of the Colorado State Medical Society. This meeting will be held in Glenwood Springs October 7, 8 and 9. The program will be published in Colorado Medicine. This will make it unnecessary for the secretary to mail a copy of the program to each member of the society, as he has done heretofore.

There is no part of a meeting more instructive, one might say more inspiring, than the discussion of the papers. It furnishes a variety of views and supplies a relief from the tediousness which the very best-written paper cannot wholly avoid. The discussion should be encouraged and made as general as possible. It might be more mature without becoming hard and formal. With this improvement in view an abstract of each paper to be read at the state meeting will be published in the September number of Colorado Medicine.

The titles of many papers do not reveal enough of their contents. The argument comes as a surprise. In such cases the most learned and the most prepared mem-

ber of the society would gain something by knowing beforehand the substance that is to be treated in greater detail in the papers.

Everyone who expects to read a paper before the society is requested to send a digest of his argument to the editor of Colorado Medicine. This summary should not contain more than two hundred words. It must be in the editor's hands not later than September 1. Writers should not wait for personal solicitation. DO IT NOW. If the papers are not complete, even if they have not been begun, the substance of them must have been in the minds of the essayists when their titles were supplied to the program committee. A carefully-drawn summary of the matter to be treated at length is a very good, if not the very best, way to begin a paper.

If those who are to take part in the program expect their papers to be well received and generously discussed, they will not neglect this announcement.

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### DICHOTOMY

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A new medical term has been coined. The ignoble practice of fee splitting has been elevated to the high art of Dichotomy. A writer in the *Muenchener Medizinische Wochenschrift* of recent date, contributes a lengthy dissertation on this timely topic.

It is curious to note that this question is a live issue abroad. The same objections, the same defense, the identical reasoning are put forth on the other side of the big pond as here, with equally indefinite and vague remedies for its abolition.

Let us be thankful, at least, that we now have a more euphonious appellation for this shady custom. Hereafter we shall greet our colleagues with the query: "Are you a Dichotomist or anti-Dichotomist?"

### COLLEGE OF SURGEONS.

An American College of Surgeons was organized at a meeting in Washington, May 5th, 1913. Four hundred and fifty prominent surgeons of North America came together at the invitation of an Organization Committee which was appointed by the Clinical Congress of Surgeons of North America at its meeting in November, 1912. This committee consisted of Edward Martin of Philadelphia, Emmet Rixford of San Francisco, John B. Murphy of Chicago, Rudolph Matas of New Orleans, Albert J. Ochsner of Chicago, Charles H. Mayo of Rochester, Minn., Frederic J. Cotton of Boston, George Emerson Brewer of New York City, J. M. T. Finney of Baltimore, W. W. Chipman of Montreal, George W. Crile of Cleveland and Franklin H. Martin of Chicago.

The invitations, which resulted in this large gathering of surgeons, were extended by the Organization Committee after a carefully prepared campaign. Each large university city was visited by a member of the committee, who met a group of selected men, brought together in each locality. Five hundred men were invited to the meeting in Washington. They represented all branches of surgery and surgical specialties.

The purposes of the College of Surgeons are the following:

"First. It should formulate a minimum

standard of requirements, which should be possessed by any authorized graduate in medicine, who is allowed to perform independently surgical operations in general surgery or any of its specialties.

"Second. It should consider the desirability of listing the names of those men who desire to practice surgery and who come under the authorized requirements.

"Third. It should seek the means of legalizing under national, colonial, state or provincial laws, a distinct degree supplementing the medical degree, which shall be conferred upon physicians possessing the requirements recognized by this law as necessary to be possessed by operating surgeons.

"Fourth. It should seek co-operation with the medical schools of the continent which have the right to confer the degree of M. D., under the present recognized standards, and urge these colleges to confer a supplementary degree on each of its graduates who have, in addition to their medical course, fulfilled the necessary apprenticeship in surgical hospitals, operative laboratories and actual operative surgery.

"Fifth. It should authorize and popularize the use of this title by men upon whom it is conferred, and its use should especially be urged in all directories of physicians in order that the laity as well as medical men can distinguish between the men who have been authorized to practice surgery, and those who have not."

"The net result of the committee's efforts is that five hundred surgeons of all specialties, representing every large center of population, every important university city with a teaching faculty of medicine, every special and general society representing a specialty of surgery, all the important surgical clinics and hospitals, besides many independent surgeons from all portions of the North American continent have consented to become founders of the organization under contemplation, and of



this five hundred fully four hundred and fifty are here at this hour ready to fulfill their obligation."

Much interest was manifested in the method to be pursued in the selection of the members of the corporation and in the method of conferring fellowships. A series of resolutions covering this subject were offered by the secretary and adopted.

The prospective Fellows are to be divided into four classes, A, B, C, and D. Classes A, B, and C are to be admitted without the formality of submitting to an examination under the following resolution:

"Resolved, That the A class shall consist of founders of the college.

"The B class shall consist of the members of the special surgical societies constituting the Congress of American Physicians and Surgeons and one hundred each, nominated by accredited committees, from the surgical section of the American Medical Association, from the section on obstetrics, gynecology and abdominal surgery of the American Medical Association, from the general surgical section of the Clinical Congress of Surgeons of North America, from the division of surgical specialties of the Clinical Congress of Surgeons of North America, from the American Association of Obstetricians and Gynecologists, from the surgical section of the Canadian Medical Association, from the Southern Surgical and Gynecological Association and from the Western Surgical Association.

"The C class shall consist of surgeons of prominence of five years in the practice of surgery or a surgical specialty and who, in the opinion of the committee on credentials, are eligible for fellowship in the college without formal examination."

For all others, coming under Class D, the following resolution was passed:

"Be it further resolved, That the board of regents, through the committee on credentials, limit the admission of the fellows to Classes A, B and C, until the board of regents formulates a standard of requirements for Class D, and reports the recommendations back to the board of governors for approval at the meeting to be called by the board of regents in Chicago, November, 1913."

### *JIM JAM JAMMED.*

It is rather interesting to note that the editor and the publisher of "Jim Jam Jems" have recently been found guilty of sending obscene matter in interstate commerce. Each has been sentenced to four years' imprisonment in the federal

penitentiary, and to pay a fine of \$2,000 and half the costs of the prosecution. They served the "interests" well, but came to grief upon the shoals of justice. Their endeavor to smash the American Medical Association by throwing mud at its officers was only one of the many activities of Jim Jam Jems. It is to be hoped that the life of this most obnoxious sheet has been permanently extinguished. It is hardly probable, however, that the activity of the "interests" will for long remain inactive. They die hard, but die they must; false claims and hypocrisy cannot prevail against enlightenment and truth.

### FATALITIES AFTER SALVARSAN.

The April number of the Berliner Klinik is devoted to a survey of the fatalities following administration of salvarsan. The list includes a personal case reported by the author, J. Schestopal of Odessa. His patient was a girl of 11 with parenchymatous keratitis from inherited syphilis. After a vigorous course of mercurial treatment vision improved and the general health was good, but the Wassermann reaction was still strongly positive. Fifty-four injections had been made in sixty-nine days, but the persisting Wassermann reaction showed that the causal germs were resistant to mercury and he changed to neosalvarsan, giving an intravenous injection of 0.4 gm. neosalvarsan (corresponding to a dose of 0.266 of salvarsan). Fifteen minutes later the child developed slight and transient nausea, chilliness and headache, but she felt so well by evening that she went to a moving picture show. Three days later a second injection was given of 0.75 gm. neosalvarsan (equal to 0.5 gm. salvarsan) likewise in the median cephalic vein. The bowels failed to move for three days; nausea and headache developed, followed by a sudden onset of symptoms of an acute affection of the brain, and the child died within twenty-four hours. The necropsy findings were negative, nothing pathologic being found except a slight tendency to fatty degeneration of the liver. The features of the case also exclude anaphylaxis, and they did not correspond to the picture of arsenic poisoning. Schestopal groups the case with the fatalities reported by Kannengiesser, Rissom, Westphal, Almquist and others, in which the internal organs were comparatively sound and there were no hemorrhages in the brain cortex, and the severe brain and spinal cord symptoms can be explained most plausibly by Ravaut's "cerebro-spinal reaction," evidenced by the appearance of albumin and lymphocytosis in the cerebro-spinal fluid. Ravaut found this cerebral reaction in the secondary stage of syphilis; but in Schestopal's case the disease was of the hereditary type.

## *Original Articles*

### *THE INFLUENCE OF MENTAL ATTITUDE IN THE TREATMENT OF DISEASES OF THE ORGANS OF RESPIRATION AND CIRCULATION.\**

BY EDMUND J. A. ROGERS, A. M., M. D.  
DENVER, COLORADO.

Every physician, in his conduct towards his patient, aims to produce in him a confident expectancy towards the treatment of his disease, and a stimulating hope for a favorable outcome of the disorder. By so doing the physician practically acknowledges that he realizes that mental attitude exercises a direct influence upon the course and ultimate outcome of the disease.

If the mental attitude exercises no such influence, why are we so careful to promote a cheerful, encouraging environment, and to avoid all depressing influences? And if a favorable mental attitude in the patient does exercise a beneficial influence, why do we not more systematically and scientifically study the process by which it may be promoted?

I maintain that psychology is as advanced, as exact, and as well understood a science as chemico-physical therapeutics, and I believe the mind is constantly playing an active part in influencing the results in all medical treatment. If it be so, why, while we devote so much time and study to the administration of physical remedies, do we so completely ignore the scientific investigation of the phenomena of the mind?

It is a constant source of chagrin to me that for so many years I should have practiced my profession, in absolute ignorance

of the existence of scientific knowledge, the possession of which would have materially increased my usefulness and efficiency in the control of the diseases and disorders of my patients. I hope, however, that the day has passed in which psychology was looked upon with distrust by the profession, and that it will be no longer ignored in our medical schools. If our medical course is too short, or too crowded, for a place to be found for practical applied medical psychology, our course is too short and too incomplete to qualify our students for the satisfactory practice of medicine.

There are principles which are too important in the part they play in the causation, course and treatment of disease to allow their application to be longer left to intuition, to instinctive guesswork, or to uninstructed common sense. We all use, in some sort of a way, psychological methods. Why not learn to do so in the most scientific way?

Innumerable papers can be found in current medical literature written by scientific and experienced medical practitioners in all parts of the civilized world expounding the theories and giving practical results in medical psychology, so I need not here discuss the process by which, or the degree to which, the mind of the patient influences the physical conditions. I must, however, positively affirm that psycho-therapeutics is not a department of medicine interesting only to the neurologist. It is of universal application, and is consciously, or unconsciously, continually used by every practitioner in every department of medicine.

To us in this society it is of great interest, for in the conditions and disorders which we here especially discuss, it undoubtedly plays an all important part in both causation and treatment.

In the limited time properly allowed for the reading of a paper while presenting so

\*Presented to the American Climatological Association at its annual meeting at Hartford, Conn., May, 1912.

broad and so generally applicable a subject, one must, necessarily, be limited to a general statement of principles and theories, and then to give a few practical examples of the applications of these principles.

Psychology teaches that, and physicians are generally aware that, states of mind can, by voluntary effort, be developed, which directly stimulate or inhibit the emotions. Thus, anxiety, worry, fear, despair, and all depressing ideas on the one hand; and joy, hope, happy anticipation and confident expectancy, on the other, are conditions which can be directly influenced, and as all are aware, habitual emotional states directly influence the general mental attitude.

It is beyond question, also, that the action of many of the organs is continually changing with the altering mental states; the respiration changes, in health and in disease, as attention and expectancy vary; and the heart and arteries are undergoing constant variation in their activities as the attitude of the mind changes. Thus, we constantly see the exhilarating effects of good news, and the physical depression of grief, the blushing of shame, and the pallor of fear. These are all physical results, due, directly, to mental conditions which can be produced by volitional, as well as accidental circumstances.

Pawlow has proved for us that the digestive secretions are directly influenced by mental states, and it is easy to demonstrate, clinically, that all other secretions and excretions are similarly affected. It is also easy to clinically show that the mucous membrane of the entire respiratory tract is influenced by the emotions and the expectancy of the patient.

If the aeration of the blood through the changes in the depth and rhythm of respiration, and the force, volume, and rate of the blood-stream, through cardiac and arterial variations, can be modified by acci-

dental and volitional mental states, we must admit that diseased conditions in these organs must be influenced by similar accidental and volitional mental states; and any state that can be produced accidentally can be produced volitionally. In short, then, if you can influence the blood supply to the lung by the means of volitional energy, can you not modify the course of the disease in the lung by the same procedure? And such disease would be yet more influenced by the modification of the secretions of the mucous membranes and of the glands. Volitional control of the heart's rhythm and force would also certainly bear upon the conditions attendant upon organic cardiac disease.

Any patient and observant investigator can quickly satisfy himself in his clinical work, of the truth of the statements of the psychologists, that action and secretion in the tissues and organs are modified by mental states. Experimentally, these facts are most easily demonstrated by developing the desired states of mental control through direct suggestion, while the subject is in a condition of passive sympathetic attention. Clinically, there are many directly and indirectly produced conditions in which mental control over tissue activity is shown. Indeed, no one who has carefully looked into the subject will deny that the physiological activities in the body are constantly being stimulated or inhibited by the co-existing mental state.

Theoretically, we may argue for abstract parallelism, but clinically we all recognize that the modification of physical phenomena is generally the direct result of a change in mental attitude produced by conditions in the environment of the patient.

As I understand medical psychology, it is based upon this theory, that the tissue activities of the organism are constantly either being stimulated towards an increase of the energy of recuperation and repair. or this energy is being inhibited by one's



mental attitude. And that while mental attitude is, generally speaking, automatic and habitual in its action, this attitude can be modified through volitional attention, and in this way new habits can be acquired.

The influence of the physician upon the mental attitude of his patient is, of necessity, important. Our neglect of this has hitherto been due to the fact that we did not grasp the reality of this influence. That the mind of anyone is being constantly influenced by its environment is only beginning to be comprehended, and the importance of the bearing of this fact upon the practice of medicine can hardly be exaggerated.

The indefinite use of the term "suggestion" produces much confusion of thought, and especially so, as it is often used to convey an idea of some mysterious force. I understand the fact to be that everyone is constantly giving and receiving suggestions, and that no suggestion is without some influence upon the receiver. The physician's suggestions usually reach a sympathetic and responsive mind, and are, therefore, especially productive of result.

Briefly then (1) psychology teaches us that the mind of the subject directly influences the tissue activity of his entire organism, and (2) that the mind is being constantly influenced by its environment, and, especially, by the ideas presented to it by those with whom it is in active sympathy.

Practically, we find much variation in the responsiveness of different tissues to the mental attitude, but among the more active are the circulatory and secretory systems.

Acting upon these ideas, I find myself appealing in every case directly to the intelligence of my patient, and when I find, as I usually do, a sympathetic and interested response, I invariably see some beneficial result from my efforts.

I try to impress such ideas as those al-

ready expressed; that a constant energy is diffused from the higher controlling centers which is modifying the activities of all the cells; that this efferent energy is directly influenced by the mental attitude; that this mental attitude is to the greatest extent the result of volitionally acquired habits of thought, and that the presence of the idea in consciousness is not the essential element, but that the nature of the dominating idea in the controlling and impelling complex is the important factor. Hence, in general, I try to produce a confident expectant attention, with an entire suppression of the anticipation of failure, and the constant presence of a subjective sense of physical control.

I well know how wildly absurd this sounds to those who have not, or will not, investigate it, but a few of you know that it is more than a theory, and I urge those of you to whom it appeals, to apply it, and if you will exercise a patient, expectant perseverance, you will be surprised—yes, often astounded—at the results. Do not give up that which you know to be good and beneficial to your patients, but add this something to what you are now doing, and you will, at once, increase the efficacy of all your work. The satisfaction you will attain will more than compensate you for your efforts.

My assertion, that after thirty-five years of constant medical practice, I find the entire atmosphere of my work greatly changed for the better, and the results of my treatment immeasurably improved through the application of these ideas will, I know, carry more weight than the recital of any number of cases. Yet you will get some help from a few briefly sketched examples of the results obtained in actual practice in respiratory and circulatory disorders.

I need not mention cases of functional circulatory disorders, such as many forms of tachycardia, and purely emotional dis-

turbances of every class. In these, all admit the direct and all-powerful efficacy of mental influence.

In organic heart lesions, however, few realize what can be done. Here the attitude of constant fear and the anticipation of disaster give place to a state of physical comfort and confidence in the ability to control the organ.

Thus, in the case of a young man, E. M., to whom I was called last June (1911). He was 22 years of age, and had been seriously ill for some weeks, suffering from an acute exacerbation of a chronic endocarditis, accompanying an acute rheumatism. His heart had been much impaired for many years from previous attacks. It was greatly dilated, and this condition was accompanied by the usual distressing symptoms in an aggravated form.

A change in mental attitude was quickly followed by physical improvement in all the conditions. In a few weeks he voluntarily stated that while my remedies helped him much, my visits and talks helped him more. He soon resumed and has continued his work. I met him in the street during the past few weeks, after not having seen him for many months. He said in substance: "I am steadily at work, my heart generally behaves well, and when I feel that I am over-straining it, I stop and talk to it. I feel that I can control it entirely, and I know that I do."

In January, 1911, A. H., a boy 9 years old, came under my care. Previously healthy, he was now suffering from a most severe rheumatic endocarditis. A mitral systolic murmur was the loudest and harshest I have ever heard. Dilatation was great, and his symptoms assumed a severe septic type. One of my confrères (a member of this society) gave an emphatically bad prognosis. The patient combatted the administration of all medicine, but responded mentally very readily. His improvement was slow, but after it once be-

gan, satisfactory, although the valves were left terribly deficient. He spent last summer at Manchester-by-the-Sea, and the past winter at home, attending school. He is now the picture of health, and came to me in May for permission to take part in the school athletic sports, saying he could win several prizes. A loud murmur still persists.

I am well aware that this description of the results in these cases gives little idea of the reality. I can, however, emphatically state that I have never known a purely medicinal treatment approximate them, nor those in several other cases of both acute and chronic organic lesions, where the mental attitude was stimulated to active co-operation.

I shall give one other case to show the extraordinary degree to which direct heart control can be developed:

In 1907, for peculiar social and non-financial reasons, I was called upon to take charge of Mrs. C., 22 years of age. The heart had been diseased from early childhood, there being a severe mitral insufficiency. It was very weak, and she was generally frail and nervous, with the necessary accompanying cardiac instability. She had had two children. Both labours, it was stated, ending in a complete collapse and severe hemorrhages. She was recovering from a recent operation, in which she had collapsed under the anæsthetic, and had been told that she should never again risk taking any anæsthetic under any circumstances. She responded to suggestive treatment, phenomenally, and soon, apparently, completely controlled her heart.

She became pregnant for the third time, but bore its strain wonderfully well. I kept the suggestion constantly before her that she should have an easy labour, and that her pulse would remain throughout it all at 80. As the crisis approached, her family became more and more apprehensive of disaster, and one sister came many

hundreds of miles so as to be present. Her courage and self-control were superb. The labour was too rapid for medical assistance to be present, and the pulse was 80, when, during the third stage, I arrived, and did not vary from this rate. She immediately fell into the quiet sleep of a child, and every condition was ideally normal, the pulse remaining for days always just about 80.

My experience in asthma is not very extensive. With several cases I have found the paroxysm in pure asthma almost uniformly relieved by suggestion, but in older persons with a deeply fixed habit, their recurrence has often not been controlled. In younger people, it appears to be more favorable.

One very chronic complicated case will illustrate the results obtained in several others:

F. H., aged 40, had had asthma since infancy. During each winter, for many years, I had attended him for a very severe, chronic bronchitis, with at least one attack during the season, of some bronchopneumonia.

During the fall of 1907, he was worse than usual. He would brace himself for most of the night, cough incessantly, and the purulent expectoration was most profuse. His weight fell to below 118 pounds.

I had used direct suggestion with his family, and his wife had begged me to do so with him, but not realizing that it could benefit him, I had postponed doing so. On Sunday, December 29, 1907, he was too ill to get up. Upon my arrival he requested me to talk to him. I did so, and the result was marked. He was taking much medicine, but he gradually, upon his own volition, stopped entirely. He immediately began resting better, and every symptom rapidly disappeared. He resumed his work on January 2, and before the middle of the month his cough and expectoration had entirely ceased. On February 1 he weighed

132 pounds, a gain of over 14 pounds in a month, and he continued better than he had been for many years. During the succeeding years, so long as he remained under my observation, he had no real return of the asthma or the bronchitis.

The spasmodic night cough and profuse expectoration of chronic bronchitis can often be promptly and permanently relieved.

I have had quite a series of severe cases of irritability of the respiratory tract and entire mucous membranes which come into the group commonly called "hay fever," in which the results were simply astonishing to me, and the failures very few. The relief from the asthma, the profuse secretion, and the burning sensation in the mucous membranes is often apparently immediate and generally permanent.

I am led to believe that the whole course of pulmonary tuberculosis can be modified by proper mental adjustment.

It is necessarily hard to prove that the secretion of the antibodies can be stimulated by purposive attention, and the subject is too extensive for me to discuss in my limited time.

It is open to question if the results obtained by our most successful men are not more often due to indirectly suggested mental control than to the direct physico-chemical action of the applied remedies.

That through the mental attitude, the circulation, the digestion, and all secretions and excretions can be modified is beyond question; and I have too frequently seen the temperature influenced to have any remaining doubt that in many conditions it is subject to mental control.

And when so many of the symptoms can be directly affected, the entire syndrome must, necessarily, be modified. I am certain that I have seen the course of the disease modified in every stage, and in very many different combinations of pathological lesions.



I shall sketch one case as an illustration of several:

In November, 1906, E. R., 22 years old, just arrived from the Pacific coast, was placed under my care. His condition was such, that had he been equal to the journey, I should have advised his immediate return. One lung was entirely infiltrated, and the other apex involved, while a general congestion impaired the entire tract. The heart was rapid and weak, and the temperature remained high. He attempted to take but little food, and this caused him acute distress, while he asserted that to take any medical preparation caused great agony. His bowels moved only when forced to do so.

The tarsal bones of one foot seemed all disorganized, and soon after he came, they seemed to loosely crepitate in a suspending purulent emulsion. His restlessness and anxiety were extreme.

Absolute rest in Heartsease Hospital, beginning upon a milk diet, was my only possible course. He responded wonderfully to direct suggestion. The extreme restless anxiety and nervous irritability gave place immediately to a peaceful optimism. In a few days he was upon the fullest forced diet, without digestive distress, and his bowels were moving regularly. Every symptom, except those due to the foot, rapidly improved, so that in a month his temperature and pulse were normal, and in nine weeks he left the hospital wearing a plaster cast, which was made removable, as two sinuses were discharging in the foot.

In February, 1907, amputation seemed unavoidable, but rapid improvement began and continued. His general condition became so good that he went into the mountains near by for the summer; the foot slowly but continuously healing. As his lung improved, its contraction rendered breathing difficult. In the summer of 1908, he discarded his crutches and walked with a cane. The winter of 1908-1909 he

spent in Arizona, returning in the summer, but he has been in California continually for the past two years. He writes that he has just had a severe illness, and is now taking some special serum treatment, but that he has not lost his helpful optimistic state of mind.

I consider the usual, so-called "optimism" of the tubercular to be more often the indifference of hopeless despair than the confident expectancy of a conscious self-control.

Other cases would but repeat this general outline, but yet would give little idea of the phenomena really observed. I have seen confirmed night sweats stop with one suggestive treatment, and almost every other characteristic symptom as promptly influenced.

I cannot better conclude this superficial sketch than by the bold assertion that, after several years of close study, and practical investigation of this subject, I am firmly convinced that in the volitional development of the subjective mental energy of the patient—that energy which has always been the active agent in repair—there is a therapeutic potentiality which is far greater than we can, with our present knowledge, realize.

#### AUSCULTATION.

H. Sewall, Denver (Journal A. M. A., June 28), emphasizes the importance of auscultation in determining the earliest changes in lung tissues. It does not make x-ray examinations less essential, but he believes that auscultation is capable of giving the earliest objective information of physical changes in the lungs. It demands an analysis of the sounds in the vibrations due to the resonance of the viscera and those of the chest wall. The latter can be determined by pressure of an appropriate form of stethoscope. Vibrations transmitting the whisper are confined almost wholly to the viscera. The modification of the voice sounds, their quality becoming amorphic and their duration prolonged into an echo, are the striking characters which, when accented by stethoscopic pressure indicate pathologic changes in the lung. The character and distribution of vocal signs over the normal chest by auscultation are so constant that a topographic study may definitely suggest departures from the normal and the intensity and distribution of morbid changes within the lung even when too slight to appeal to the senses through any other method.

## *THE UNSTABLE LUNG CAPILLARY IN ASTHMA\*—A THEORY.*

W. V. GAGE, *M. D.*  
PRIMERO, COLO.

After a personal experience with asthma, extending over a period of about eight years, I have come to a conclusion as to its causative factor and, while this theory differs in almost every essential from the recognized "textbook" explanation of classical asthmatic symptoms, I have found it to be very satisfactory in the matter of answering the majority of actual clinical puzzles which are propounded as a result of every typical asthmatic seizure.

If my conclusions are correct, we are safe in starting the discussion, in discarding the textbook teaching that "the asthmatic lung symptoms are due to a spasm of the air cells and smaller bronchii," in spite of the fact that this statement has become so classical as to make even a hint at its denial almost a sacrilege.

My observations, in my own case, have led me to believe that the terrible air hunger and labored respiration, so characteristic of the disease in question, are due to an unstable condition of the blood vessels of the lung and that all the respiratory symptoms present during an asthmatic attack are produced either because of a lessened or of an over-abundant blood supply to the lung, together with an inability on the part of the lung tissue to properly eliminate certain toxic products, due to previous faulty metabolism.

To suppose that the dyspnoea in an asthmatic attack may be produced either by an over action of the vasso-dilators or the vasso-constrictors of the blood vessels supply-

ing the lung may, at first blush, appear anomalous, but, if we consider the anatomical relations between the air cells and the capillaries which surround them, all doubt should be removed that such variations from normal may, in either event, produce typical asthmatic symptoms.

Suppose that we first consider a condition where the lung capillaries are, from some cause, overly dilated, and it is at once obvious that, owing to the fact that only so many cubic inches of space exist in the thorax for the accommodation of both blood vessels and air cells, the latter must be compressed, to compensate for the increased blood bulk.

When this condition of dilated lung arteriole occurs, we get air hunger, cyanosis and extraordinary respiratory effort for the reason that the air cell surface is so reduced in area, on account of the increased blood bulk and pressure outside the cell, that it cannot properly oxygenate the blood brought to it from the economy, and the consequence is that the blood must be returned to the system, heavy with the products of metabolism which should have been eliminated or chemically changed during the blood's contact with the lung tissue.

Take now the case where the vasso-constrictors are causing a markedly lessened caliber in the pulmonary capillaries and almost immediately we are given a clinical picture similar to that shown where there was a dilatation of the blood vessels and consequent compression of the air cells, i. e., air hunger, cyanosis, labored breathing, etc.

With a contracted blood vessel, we must expect a corresponding dilatation of the contiguous air cells and a consequent supply of oxygen far in excess of normal, but this overplus of just what the struggling asthmatic most needs, is of no avail for the reason that the overly contracted blood vessel

\*This article was first written about two years ago, and at that time there was little, if anything, published, as per the last two paragraphs.

is mechanically unable to present enough blood to the dilated air cell to allow of the absorption and chemical change so necessary for a proper balance between the two systems.

Of course we must add to the above, in both cases, the increased difficulty in breathing, due to the abortive effort of the overburdened lung tissue, to eliminate the abnormal products of faulty body metabolism and the consequent production of an abnormal secretion by the mucous membrane, and it must also be borne in mind that, if it were not because of the faulty body chemistry that allows of the manufacture of this original toxin, there would be no increase or diminution in the secretions which produce the faulty caliber of the lung capillary.

As to the ultimate causative factor, which brings about the abnormal dimension of the lung blood vessel, I can only theorize further, and again cite by own case, in support of my views.

Hypodermics of adrenalin chloride have invariably given me relief, during my asthmatic attacks and, from the known action of this remedy, we must infer that, in my case, the paroxysms are due to the effect of a dilated lung capillary and, inasmuch as a laboratory salt derived from the supra-renal gland, produces the above result, we must argue that, if my adrenals were functioning properly and delivering a supply of their secretion to the economy that was adequate both as to quality and quantity, I would not have asthma.

Somewhere, in the chain of complex chemical changes which compel the transformation of certain portions of ingested food, into substances capable of being transformed into the secretions of the various glands of the body, there has been a failure of process, and that substance which, in the normal individual, becomes, under the action of the adrenal body, a normal secretion, is transformed in the

asthmatic and becomes an abnormal secretion or else this failure in previous chemical metabolism so inhibits the action of the adrenal body that it delivers a supply of its secretion in such a limited quantity as to prove inadequate for the demands of the system.

It is probable that improperly handled food, and the consequent intestinal fermentative changes, will ultimately be found to be the basis for asthma, migraine, rheumatism, chronic eczema and numerous other diseases in the same class.

I think it hardly possible for a starving man to continue his asthmatic symptoms, and by this I do not mean a man who has missed two meals.

A lack of proper knowledge as to the next step back, in the faulty body chemistry which eventually allows of the asthmatic seizure, prevents my carrying the discussion of this subject further, except to say that the clinical picture given by the two forms of asthma described argues that, somewhere in the body will be found a gland which is always acting in opposition to the adrenal body and that these two glands in the individual, maintain the arterial balance necessary for health.

The idea of the overly dilated or the overly contracted arteriole explains, in my mind:

First. The difference in the appearance of the asthmatic who is habitually pale during his attacks, and the one who is red faced and plethoric throughout his seizure.

Second. The question as to why Adrenalin will at once relieve one patient, while it increases the discomfort of a second one, to whom amyl nitrite or glonoin must be given, in order to obtain satisfactory results.

Third. The benefit derived by asthmatics from a change of climate or altitude, and why a patient is free from his attacks so long as he remains in a locality which because of its altitude or environ-



ment, so regulates the blood pressure as to overcome in a measure, the action of the toxic product which compelled an abnormal caliber in the lung blood vessel.

Fourth. Experience has taught us how quickly this toxic element will again assert itself, in the matter of producing immediate asthmatic seizures, whenever a patient, free from his regular attacks, on account of change of residence, dares to presume to again take up his former habitat.

To digress somewhat, in closing, I wish to state that an overdose of Adrenalin will produce symptoms similar to those which we see in fear, fainting, shock, profound anaesthesia, epilepsy, etc., i. e., pallor, tremor, sweating, prostration, vertigo and spasm.

It is possible that the symptoms enumerated above, when found in the diseased states mentioned, are due to a more or less sudden liberation of a surplus of the adrenal secretion.

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### NEUROLOGIC NOTES.

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The matter included in this paper makes no pretense for originality nor even a systematized report of the neurologic work of the year, but rather, as containing the most important and interesting work to the mind of the author, and is presented as such with the hope that it will be interesting as well as instructive.

Apropos of the sensational work of Carrel, similar investigations have been made by Marinesco and Minea<sup>1</sup> in the culture of spinal ganglia of mammalia. Harrison has succeeded in cultivating nerve cells of the embryo frog on a fibrin clot. He has demonstrated that the central nervous system of the embryo frog, extirpated at the period of the development which precedes the appearance of the peripheral

nerves and immersed in lymph, might produce nerve fibers; the only question has been as to whether his observation concerned neural fibers. Very recent observations by Burrows have appeared to fill this space. Applying the method of Harrison to the culture of the tissues of warm-blooded animals, he was able to observe the growth of nerve fibers in the embryo chicken, by placing a small piece of the neural canal in a hollow plate and covering it with the plasma of the same animal, protected by sealing with paraffine and placed in an incubator at 39° C.

The spinal ganglia of rabbits and young eels were removed, rapidly washed in Ringer-Carrel solution and sterilized by heat, cut in small pieces and placed immediately in auto or heterogeneous plasma. Examinations were made from the second to the sixth day of culture. The first phenomena which we have observed in concurrence with the first sign of growth to be seen at the periphery of the portion of the ganglia, is the formation of a special zone where the plasma, generally opalescent, became transparent. Wherever coagulation occurs, it is only through the process of plasmolysis. It is not outside of this zone, but on the interior of the coagulated plasma, that they have observed the phenomena of the growth of the new cells.

The description is in great detail and the photographic plates illustrating the growth are quite interesting. Among the conclusions, the statement is made that the view held by Hansen, and more recently by Held, is sustained—that the development of the nervous system is the result of the collaboration of two orders of cells: first, the neuroblasts, which produce the axones and the neurofibrils, the conducting cells—the *Leitzellen* of the Germans—in the interior of which course the increasing numbers of embryonic nerve fibers. According to Held, neither the terminal en-

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<sup>1</sup>Revue Neurologique, Nov. 1912; p. 469.

largement not the nerve fiber itself, run freely in the intercellular spaces, as was believed by the followers of His, but were contained in the anastomotic expansions (plasmodesmes) of the conducting cells. The latter should have the mission of nourishing and protecting the axones which later become the cells of Schwann. The author's research, however, would deny—more or less—in part, the theory of Hansen and Held, because they have seen that the fibers of recent formation may appear and be developed in the plasma without the intervention of the plasmodesmes or the conducting cells. But, while the young connective tissue cells exist in abundance, fibers of new formation show a predilection to attach themselves to the cell body and to follow its prolongation. Further, they say that the researches prove that besides the living cell produced by its intrinsic energy of growth, new nerve fibers may later spring up without the influence of a single factor originating in the cell, but with the course and general conduct of the development, the fiber requires the support of other elements which they reach according to the various tropisms.

A new reflex of the hands present in lesions of pyramidal tract, has been brought to attention by Gordon in the *Revue Neurologique* of October, 1912, to which has been given the name of "finger phenomenon." His attention was first attracted to the sign in November, 1911. Eight hemiplegias, fifteen normal persons and three cases of hysterical hemiplegias have been examined. The phenomenon, he states, has only been found in those cases of organic origin. The phenomenon may be elicited as follows: The forearm of the paralysed member is raised with the elbow supported on the table, although this is not absolutely necessary. The hand of the operator encircles the wrist of the patient, the thumb is placed on the pisiform bone, while the other fingers are brought around

to the dorsal surface of the wrist. In this position, pressure is made upon the bone by the thumb, especially on the radial side. A precaution must be taken to avoid compression on the dorsal surface of the wrist where the extensor muscles are located.

The following phenomena are to be observed: The fingers are elevated and assume an extensor position and sometimes, fan-like. In some cases, only the last two fingers extend; in other, it is the thumb, the index and the middle fingers; or most often, the thumb and index finger. Sometimes the phenomenon is produced more rapidly and more distinctly, when the ring finger is first elevated and lightly supported during the test, in the position of semi-extension. Up to the present time, he has observed 52 cases and he has never found the sign present in hysterical or healthy individuals. Further, he has observed that it is almost impossible to produce the phenomenon of the fingers in old hemiplegias, in which the fingers are in a state of contracture. In the other small number (three), the phenomenon cannot be elicited, but in the great majority of his hemiplegias and monoplegias, there has been no difficulty in evidencing it. He states that he has had occasion to test six cases of hemiplegia one or two days after the attack; in four of these cases, the sign was positive. In two of the other cases, he was not able to obtain the elevation of the fingers; he compares it with his paradoxical reflexes elicited by compression of the calf muscles and it is for this reason, he speaks of it as "finger phenomenon" in analogy with the "toe phenomenon;" whereas, in the normal state, the irritation of the flexor muscles causes flexion of the fingers or the toes, (sometimes no movement is observed). In the pathological cases, especially those where the pyramidal tracts are inhibited, extension of the fingers or toes is obtained.

In view of the recent showing that in limited lesions of the upper motor pathway, those destined to the arms alone or to the arms and face, may be more especially involved, in which case, the Babinski, Gordon and Oppenheim reflexes are found to be negative, this recent sign of Gordon, if experience should prove its constancy, will be a valuable addition.

It is interesting to note the result of the examinations of as careful an observer as Nonné, that in his opinion, reflex pupillary rigidity is sometimes produced by alcoholism. Out of 1,460 cases of grave chronic alcoholism, it was found 18 times. Nine of these cases were examined for pleocytosis and Phase I, and as the result he states that syphilis was probably not present. That reflex pupillary rigidity may be produced without syphilitic infection is still shown to be controversial, for Witer concludes, upon examination of 1,000 cases of alcoholism, that persistent reflex pupillary rigidity does not occur from alcoholism alone. He concludes finally that it occurs only in tabes, paresis, cerebral syphilis or in persons who have contracted syphilis. Yet, on the other hand, Binswanger, Siemerling and Nonné have reported pupillary reflex rigidity persisting alone as long as twelve or fifteen years.

Meningitis has been studied by Kopetzky (Proc. Am. Laryng. Rhin. and Otol. Soc., 1912) with relation to the changes common to all forms of the disease, independent of the invading organism. He shows that there is an analogy in the symptoms of brain compression and those brought on by meningeal tissue reactions to microbial infection. Further, that an infection of the nervous system, especially the membranes of the brain, causes an increase in the cerebro-spinal fluid with functional disturbances of the vagus, the vasomotor and respiratory centers, and that these symptoms dominate the clinical picture of meningitis. He finds that the cere-

bral edema, with edema of the membranes, is the chief factor in producing increased tension of the cerebro-spinal fluids.

The earliest evidences which he found as the result of his researches of the existence of meningitis, are changes in the cerebro-spinal fluid, the most important of which are the absence of carbo-hydrates, particularly glucose, and the change from alkalinity to acidity, and this change brought about by development of lactic acid. He contends that these changes may be evidenced before bacteria can be demonstrated in the cerebro-spinal fluid and before a notable leukocytosis develops. The article which follows in the same brochure is based upon the research in which operative procedures are recommended and the process is attacked by establishing drainage of the cisterna magna. The two papers comprise the prize essay of the National Laryngological Society, but irrigation procedures of the posterior fossa of the skull which would necessitate drainage of the large cistern, have been so notoriously fallible that one would feel a reluctance in adopting them.

Tumors of the brain still occupy the interest of neurologists, probably more from the standpoint of localization than any other, and probably for the reason that it adds a stimulus for the more exact knowledge of the pathognomonic symptoms of brain growths. Other neurologists have been forced to punctuate their experience with what they have later been compelled to acknowledge as *pseudo* brain tumor. Strange as it may seem, these cases have appeared in the literature from time to time, and Nonné, in 1904, reported twelve cases of pseudo-tumor, in most of which headache, vomiting and optic neuritis were present with focal symptoms pointing to various points of the brain. Some of these recovered, while others came to autopsy and show an entirely negative appearance.

With reference to pseudotumor, or the



meningitis serosa of Quineke, Otto Maas has attempted to show, in view of the difficulty of distinguishing clinically, that lead may be a cause, and he reports one case with autopsy from lead intoxication. In his case there was optic atrophy, headache, vertigo and vomiting, which naturally aroused a suspicion of brain tumor.

Much attention has recently been given to the localization of tumors of the parietal lobe. Kato (*Deutsche Zeitschrift für Nervenheilkunde*) has described a syndrome, of which the literature contains not a few. In this case a man began to have weakness in the right lower limb, uncertainty in the right hand, a sensation of numbness in the right lower limb and a sensory palsy extending over the whole side of the body, affecting the temperature and pain sensations in less degree. Astereognosis, bilateral papillitis, occasional paraphasia, severe headache and vomiting were later symptoms. An endothelioma was found in the left parietal lobe and post-central gyrus.

When one considers the work of Hitzig and later that of Campbell and Brodman and confirmed by the number of writers since their original work, that the motor area of the cortex does not extend posterior to the fissure of Rolando, the importance of sensory symptoms and diagnosis of parietal lesions becomes manifest, and a tumor located in the parietal lobe, to produce motor symptoms, must be of sufficient size to extend forward and encroach on the anterior wall of the Rolandic fissure, at least.

In a case observed by the author the first symptoms were those of uncertainty of muscular movement, attributable, it seemed, to the muscular sense. There had been no loss of motion. Astereognosis was marked in the left hand and the finer movements of the fingers and hand, as well as the concomitant bilateral movement of the facial muscles, was lost. There was distinct blindness in the left half of the visual

fields, without hemipupillary reaction. Optic neuritis was marked, showing swelling in the right half of each disk. Decompression was done as a preliminary step; the privilege of a subsequent operation was denied and the patient developed paralysis of the left half of the body, with rigidity, complete blindness and death, probably from cerebral edema. Unfortunately, autopsy was also denied.

Brain puncture has come to be practised rather frequently by German neurologists, in order to discover the presence of tumor, as well as of blood, pus and cystic fluid within the skull. In 1904, Neisser and Pollack showed how the puncture could be made. In one case, they were able to cure a patient by puncturing a cyst in the cerebellum several times and withdrawing the fluid. In another case they extracted material mixed with blood and yellowish fluid, which microscopically contained large endothelial cells and a diagnosis of softened tumor of the brain was made. In several articles, the method in all is described practically as Pfeiffer proceeds.

He uses an electrically-driven motor to which are attached borers with blades of a breadth of 3 mm. at the point, and these are forced through the scalp and skull. A silver wire is kept inside the instrument until the dura is reached. If blood or pus is suspected outside the dura, a syringe is used to withdraw some of this fluid; otherwise, the needle with the silver wire must be pushed through the dura into the cortex of the brain and the syringe then employed. The needle is inserted slowly into the brain, the gradations on the needle being watched, until a depth of 3 to 4 cm. is reached. In this way he is able to withdraw cylinders of brain and tumor substance, several centimeters in length and at least 1 mm in diameter, and these pieces often show, microscopically, pathological ingredients. A local anesthetic is employed and the operation is stated to be painless.

Few untoward effects have been noticed. Pfeiffer saw slight hemorrhage in a few cases and death in one case, caused by injury to the artery of the corpus callosum, the position of which was altered by the tumor. The general conservative belief is that when no more punctures are performed than are deemed absolutely necessary, the operation meets with general approval in Germany.

With reference to the associated lateral ocular movement, Mariana (*Deutsche Zeitschrift für Nervenheilkunde*) has arrived at some remarkable conclusions as the result of experimental investigations. He has demonstrated that, in animals, various muscles may be substituted by operation for those which cause the lateral ocular movements and that shortly after post-traumatic symptoms have disappeared, the voluntary and automatic associated lateral and convergent movements are still performed. He understands by automatic movement—the movement of the eyeballs in following a moving object of fixation. From the fact that convergence occurs after the internal rectus has been substituted by a muscle not supplied by the ocular motor nerve, such as the superior oblique or the external rectus, it is evident that in apes, neither a supranuclear nor a nuclear center for convergence exists. Likewise, in lateral associated movements occurring after the substitution of muscles so that those performing the movement are the two internal rectus muscles or the external rectus and a superior oblique; or an internal rectus and a superior rectus or the two external rectus muscles, it is evident that in apes, neither a supranuclear nor a nuclear center for the lateral movements of the eyeballs exist. These statements have been regarded in the neurological literature with no little astonishment, but Mariana goes farther and considers the important subject of the association tracts.

It would seem that there must be associa-

tion tracts between the two oculo-motor centers for convergence and between the abducent nucleus of one side and the opposite oculo-motor center for the lateral movements. It would tend to show, further, that there is no fixed function, whatever the mechanism may be, for by transplanting, a muscle may be rapidly made to perform a function that it did not previously have in the animal or its ancestors. Mariana asks: "Are the anatomical tracts for the ocular movements in the ape definite when the functional tracts are not?" To this question he gives a negative reply. He has not investigated the projection tracts from the cortex to the nuclei, and wisely warns against applying too strictly to man the results obtained in the ape; nevertheless, they appear to be of great importance.

Another subject which is of interest is that which Fry is pleased to regard as imperative pain, which is often difficult to treat and is without organic lesion and which is believed to be worthy of mention for the reason that most practitioners, and every neurologist, has come in contact with pains with which the patient complains bitterly and for which no cause could be determined. That they are quite common in the Polish and Hebrew races is noteworthy.

At the present time any resumé of the subject of nervous diseases would be incomplete without the mention of the opinions obtaining in the matter of treatment of syphilis of the nervous system by salvarsan. On the question of cranial nerve diseases following the injection, Saenger states that he observed nervous symptoms in three times of the one thousand cases treated. Saenger and Nonné had not observed any of these complications in their own wards after salvarsan injections. They are of the opinion that they are probably caused by the syphilis and not by salvarsan.

Conditions reported in the German jour-

nals include peroneal palsy, sciatic palsy, herpes zoster, and even death. Nonné's views of the action of salvarsan are: That the drug often produces much quicker and much more extensive results than do mercury and iodide, and salvarsan may produce favorable results when the other treatment has failed. The cases with the astonishing results are in the minority. Usually only improvement from the use of salvarsan are to be expected, and in some cases the treatment fails. Indeed, occasionally the salvarsan seems to increase the recurrences and may make the patient worse. The results have been best in the cases diagnosed as gummatous meningo-encephalitis, but Nonné has seen equally as good results from mercury and iodide; it is not superior to mercury and iodide in the treatment of ophthalmoplegia interna or reflex pupillary rigidity, or syphilitic disease of the cerebral vessels.

Oppenheim, in discussing Nonné's paper, gives as important views: Salvarsan can cure true syphilitic disease of the nervous system, but it accomplishes no more than do the drugs we have; its advantage is in the results of a single dose. It often fails in syphilitic disease of the brain and cord where mercury and iodide have failed. It is uncertain, whether its results are more permanent, and in some cases, it is injurious. It is of very little use in tabes and paresis; it may occasionally cause damage, although usually harmless. Where the diagnosis of tabes or paresis is positive, Oppenheim believes that salvarsan should not be given.

One of our leading manufacturing pharmaceutical firms recently received a letter of which the following is a copy, names being omitted:

Gentlemen: On account that I am a Doctor Osteopathic and the law prohibits me the practice of medicine, so I will sell to you at a very low price a unquestionable Farmako for the cure of Tuberculosis-Pulmonary and is very good too for the assimilation and rinfarciment (stuff-up) of Mesenteric Glandss

I, also have a infalible Medicament for the cure of several Eye diseases as: Conjunctivitis or Ophthalmy, Diptheric, Purulent, Pustular, Catharrhal and Trachoma.

In expectance of your early reply I remain:

## SKIN BLEMISHES AS SITES OF ORIGIN OF MALIGNANT GROWTHS.

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Skin blemishes, aside from their objectionable appearance, are ordinarily regarded as wholly insignificant, and with the exception of their occasional removal for purely cosmetic reasons are accorded little attention by physicians. Certain forms of them, however, occasion great discomfort and disfigurement, and all too frequently definite danger by becoming sites of origin of malignant growths. Although the malignant disease arising in this manner is ordinarily not of the more grave type, yet in one of its forms, naevo carcinoma, or so-called melanotic sarcoma, it presents one of the most pitiable and rapidly-progressive pictures of malignancy with which we are acquainted.

It is generally believed that the exceptional opportunity for injury or irritation afforded by the elevation of many such blemishes above the surface of the skin is the basis of their tendency toward malignancy; a histological study of these growths shows, however, that this tendency is due far more to certain of their structural characteristics, consisting, as they do, almost wholly of superfluous tissue, without function and without orderly arrangement, and because of this lack of function, without the steadying influence of purpose or habit, their component cells do not possess the stability either of form or number, which is the distinguishing characteristic of normal tissues, but are remarkable for their instability, showing a constant tendency to undergo change of some kind, very frequently, indeed, retrogressive change, even to the extent of complete disappearance, but all too fre-



quently under the impetus of inflammatory hyperaemia, that particular kind of change which terminates in malignancy.

Although this subject has been given consideration on many previous occasions, its importance justifies even frequent repetition, since our present state of ignorance of the cause of malignant disease, and our relatively unsatisfactory methods of dealing with it demands the dissemination of every kind and degree of information as to the manner or sites of its origin and justifies any reasonable procedure which will forestall its development. In keeping with which it seems desirable to point out the histologic reasons for certain skin blemishes, at times assuming the aspect of malignancy, the necessity of immediate interference when such a condition arises, and, furthermore, the advisability of removing those of certain types and in certain situations, lest they become malignant.

In the first place, it is necessary to readjust our ideas to conform to rapidly-accumulating clinical experience regarding the age of incidence of malignant disease of the epithelial type. The belief that malignant growths of epithelial origin occur only after the age of 40 is still too generally prevalent and leads too frequently to disastrous failure of diagnosis. Well-defined epitheliomata are seen at all ages, and one should not be influenced against such a diagnosis by the youth of the patient.

The following case illustrates this situation very forcibly: Miss E. P., age 23, came under observation July, 1910, presenting an ulcerated and crusted lesion of the right infraorbital region, the extent of which is best shown in the photo, Fig. 1. She stated that the condition began six years previously at the site of a small mole, which was irritated by pricking. Spreading had progressed steadily, in spite of various forms of local treatment,



Figure 1.

including X-ray. Various diagnoses had been made, but principally that of lupus vulgaris. A small piece removed for histological study showed the typical structure of basal-celled epithelioma. Here, then, was a case of epithelioma, beginning at the age of 17, springing from an apparently insignificant skin blemish, permitted to progress for six years, causing extensive destruction and disfigurement.

The forms of skin blemishes which possess the most marked tendency to malignant change are the pigmented and non-pigmented moles and the vascular nevi, all which are included in the Naevus group, the ordinary warts or verruca, the lymphangiomas and the senile warts, or keratoses.

Naevi are defined as "circumscribed small malformations of the skin, which have a hereditary basis or have their foundations laid in embryonic life, become evident at different periods of life, develop very slowly and are distinguished by their color or the form of their surface."

Pigmented and non-pigmented Nevi

differ only in the presence or absence of an excess of pigment in their epithelial coverings and in the characteristic Nevus cells, which constitute their distinguishing feature. Structurally, they consist of a fibrous stroma continuous with that of the body of the skin upon which they are

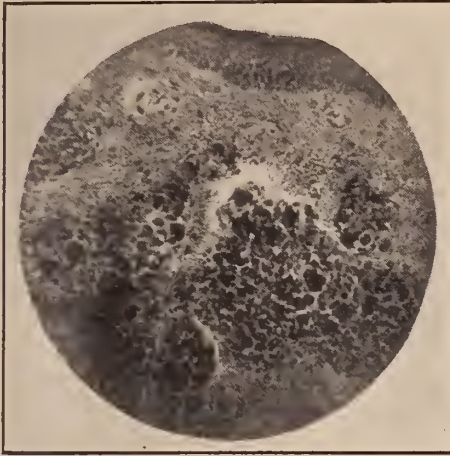


Figure II—Showing Pigmented Naevus Cells.

situated, hairs, glands and other normal appendages of the skin are present to a varying degree, but within this stroma and forming the most striking feature of the histology of Nevi are seen strands and alveolar groups of cells, varying in size from that of the normal surface epithelial cells to three times as large, and in shape from round to cubical and spindle, at times containing no pigment, again being pigmented to the extent of completely obscuring the nucleus, the cell appearing as a black mass. Fig. II.

According to Unna, these cells are derived during embryonic life from the epiblast, and, therefore, malignant growths arising from them are to be considered as carcinomatous. Other pathologists, however, do not accept this view, and at present their exact position is in dispute, Johnson of New York proposing to call them melanomata until the question is settled.

The presence of these embryonic cells in a position exposed to irritation because of the elevated nature of most Nevi, explains the tendency of such growths to undergo malignant change. The presence or absence of pigment also being a measure of the degree of malignancy, the presence of pigment in the cells indicating the more embryonic type of cell, and, therefore, the greater malignancy.

Vascular nevi consist of collections of dilated and new-formed blood vessels situated in the body of the skin, giving rise to elevated, tumor-like growths, varying in size and shape with the size and number of the vessels composing it, the color of these growths being due entirely to the blood in the vessels.

Vascular nevi are important chiefly because of their unsightly appearance and the possibility of severe hemorrhage after injury; but, on the other hand, these growths at times become the sites of origin of one of the most malignant of new growths, angio-sarcoma.

Histologically, a wart consists of an overgrowth, or hyperplasia, of the prickle-cell layer of the epidermis, resulting in a heaping up of these cells and a cornification of those superficially placed. When not exposed to pressure or re-

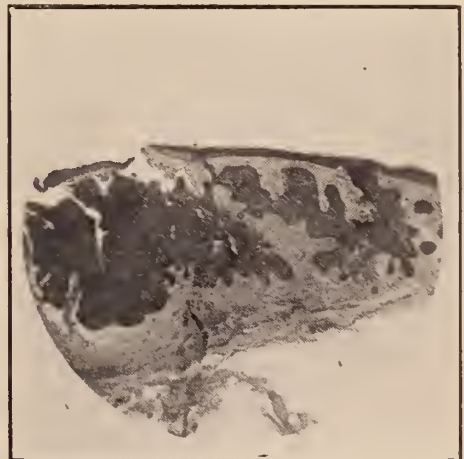


Figure III—Epithelioma Developed from Mole on Shoulder of Man of 40.

straint, a wart expends its energy of growth upward, being elevated above the skin, but if subjected to pressure, being scarcely perceptible above the level of the skin.

A wart then presents, histologically, some of the essentials of the epithelial malignant growth that is excessive and purposeless epithelial proliferation. Here, however, the new growth shows no tendency to invade the surrounding normal tissue or to indefinite growth.

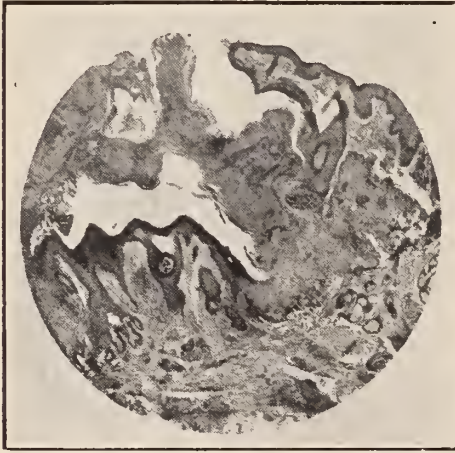


Figure IV—Epitheliomatous Change in Wart on Cheek of Man of 24.

Constant irritation, however, very frequently induces in these benign epithelial hyperplasias a change of character, and we see the lower borders of the epidermis losing its definite outline, new-formed cells invading the tissues below, acute inflammatory reaction taking place about the advancing growth, which has markedly increased in rapidity. In short, the benign has become a malignant process. Fig. IV.

Another interesting, though rather rare, congenital malformation of the skin, is lymphangioma, consisting of new-formed and excessively-dilated lymph vessels, situated in the superficial part of the skin. Clinically, these growths appear as elevated areas of irregular out-

line, pinkish or reddish in color, composed of closely-set thick-walled elastic vesicles, said to somewhat resemble frog spawn. On puncturing one of these vesicles a clear viscid fluid escapes, and in some instances continues to ooze for some hours.

These growths possess little clinical importance, but the possibility of their becoming the origin of lympho-sarcoma is to be borne in mind.

Senile keratoses are of frequent occurrence on the skin of elderly people and in individuals of florid complexion who are much exposed to wind and sun they often appear quite early in life. The usual situation is the face, but the backs of the hands are also frequently affected. Beginning as a spot of slight discoloration, there is soon noticed a greasy, roughened appearance, which gradually increases in area and thickness until a horny adherent crust is formed, varying in color from gray to brown or even black, or the crust may be soft and greasy and easily removed, leaving a moist, excoriated surface.

When of long duration such an area is



Figure V.



frequently found, after removal of the crust, to have a freely-bleeding surface, studded with small papillary projections and with definite infiltration about its borders, indicating that it has become epitheliomatous.

Such a condition is shown in Fig. V. with numerous keratotic patches over the face, one of which on the lower lid has become malignant.

#### TREATMENT.

After skin blemishes of the nature above referred to have become the seat of malignant disease, there is no further question as to what is to be done. The problem has become a surgical one and should be solved in a surgical manner, the only consideration being the extent of the operation, which may vary with the character and location of the disease.

The point which is here, however, to be emphasized is that such growths should be removed before they undergo any such change, and particularly should they be removed if they are markedly elevated and so situated as to be subject to friction from the clothing to trauma of any kind or to any other form of frequent or continuous irritation.

Now, as to the manner of removal: Mild methods in the attempt to remove warts or moles should never be employed, the use of silver nitrate, carbolic acid or the tying a thread about them are particularly to be condemned, as such methods are ineffective, incomplete and serve only to stimulate the growth to further activity.

Electrolysis, if properly used, is quite satisfactory. Curetting, followed by thorough cauterization, is the method of choice for deep seated warts and carbon dioxide snow may be used with good results in vascular nevi of all kinds. For the senile keratoses mild measures will sometimes suffice, but they are very resistant to treatment, and care should be

taken to avoid overstimulation. Montgomery recommends local applications of strong trichloroacetic acid, followed at once by copious applications of water. The object is to obtain complete but superficial cauterization, and Montgomery claims that this acid is specially adapted to epithelial structures.

But by far the best of all methods for skin blemishes of all kinds, if not too extensive, is, excision. The most rapid, the complete, the most certain in its results, aside from the occasional instances of insuperable objection to operative procedure of any kind, excision may be employed with the greatest of satisfaction to the physician and patient.

I wish then to urge a personal adoption of the practice of removing skin blemishes while they are in the quiescent state. People should be informed that such growths are a source of danger and taught to call the attention of their physician to them.

Insignificant as they seem, there can be no doubt that they give rise at times to trouble of the most serious nature, and any one who has ever seen the pitiable and terrifying course of disseminated melanotic sarcoma feels justified during the rest of his life in removing every pigmented mole that he can in the hope that he may prevent another such occurrence, and in the belief that he is doing his patient a good service.

#### CONCLUSIONS.

1. That warts, moles and certain other forms of congenital nevi, because of their histological structure, are prone, as the result of irritation to undergo malignant change.
2. That such growths, regardless of the age of the patient, should be removed at once on showing evidence of enlargement or irritation.
3. That the method of removal chosen

should be immediately effective and complete.

4. And, finally, that all skin blemishes and particularly all pigmented moles so elevated or so situated as to be subject to friction or other irritation, should be removed before becoming a source of malignant disease.

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#### A SIMPLE AND ACCURATE METHOD OF STANDARDIZING VACCINES.

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WARD BURDICK, M. D., Denver

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*Consulting Bacteriologist to the National  
Jewish Hospital for Consumptives.*

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The multiplicity of methods advocated for the standardization of bacterial emulsions, would indicate that a universally satisfactory method has not yet been found; thus, in the original method of Wright, equal quantities of freshly drawn normal blood, of a fluid which prevents the coagulation of blood and of the suspension, are mixed thoroughly, then in stained smear preparations of the mixture the ratio between the number of red blood corpuscles and the number of bacteria is determined. Assuming five million red blood corpuscles per cu. mm. the number of bacteria per c.c. may be computed. Mallory and Wright, in their method, make a 1-200 dilution of the emulsion with the aid of a red blood corpuscle pipette, of the Thoma-Zeiss apparatus, and use a specially constructed counting chamber similar to that used in blood work. Some determine the number of germs in an emulsion by the use of the unmodified blood counting apparatus. Hopkins throws down the bacteria in a given quantity of emulsion in a specially constructed graduated centrifuge tube, estimating the bacteria per C. C. by the volume of sediment. Another method is to highly dilute a definite volume of emulsion, plant plates with definite quan-

ties of the dilution, incubate and count colonies. Others use a standard density scale and estimate the number of germs per c.c. in an emulsion by macroscopic comparison.

There are still other methods used by various workers, but enough has been said to show that there exists a vast difference of opinion as to the accuracy of any of them.

I do not favor the original method of Wright for several reasons, among them being the uncertainty as to the exact red blood corpuscle content of a given m.m. of blood taken from different individuals or from the same individual at different times. It has also seemed to me unwise to repeatedly puncture the finger while working with living virulent germs, to say nothing of the unpleasantness of constantly having ones fingers sore as a result of the punctures. The method of Mallory and Wright requires a special apparatus which is not necessary. With Hopkin's method I have had no experience, but it would seem that there is a broad field for error in the use of this method. The plate method is too slow, requiring twenty-four hours before colonies can be counted, while the last named method is obviously nothing short of guess work.

For the past year I have used the following method of standardizing bacterial emulsions which combines simplicity with accuracy, and consumes a minimum of time. A solution consisting of distilled water nine parts, and Loeffler's alkaline methylene blue one part, is kept on hand. Preparatory to standardizing an emulsion, a piece of quarter-inch glass tubing is drawn out in the flame, as in making capillary pipettes for blood serum work. The glass is now scratched with a file midway on the capillary portion and carefully severed into two capillary pipettes, each obviously having a capillary aperture of exactly equal diameter. Into a watch crys-

tal are placed, say, nine drops of filtered methylene blue solution with one of the pipettes, held in a vertical position, with just enough pressure exerted on the teat to promote the collection of the drop at the point of the pipette. To this is now added one drop of bacterial emulsion, with the other fresh pipette, held in the same manner. The drops from each pipette will be of equal size, since the capillary apertures are of the same diameter and both manipulated in the same manner. One has now in the watch crystal an exact 1-10 dilution of the bacterial emulsion; this is now allowed to stand ten or fifteen minutes, during which time the germs will become stained. With a fresh pipette the dilution is now carefully drawn up and discharged into the dish several times to insure equal distribution of germs in the mixture. With the same pipette a suitable drop of the dilution is now placed on the island of an ordinary blood counting chamber, covered with a thin cover glass, and set aside for a few moments until the germs have settled on the ruled surface, where they may be counted in the same manner as are red blood corpuscles and where they will be plainly visible by reason of the methylene blue taken up by them. The degree of dilution may be varied to suit the density of the bacterial emulsion to be standardized.

After this procedure there are no expensive pipettes to be cleaned and sterilized with difficulty. Those used in this method are dropped into the autoclave to be run up with the next steaming and discarded. The counting chamber is placed in cold lysol solution and given sufficient exposure to destroy the germs being handled, after which it is held under the cold water tap, thoroughly rinsed in running water and dried with a cotton cloth. The watch crystal is treated in the same way and dropped into cleaning fluid, where it remains until again brought into use.

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## INFANTILE CEREBRAL PALSY.

By LEONARD W. ELY, M. D.,  
DENVER.

Synonyms: Little's disease, spastic paralysis, cerebral paralysis, etc.

This form of paralysis is not a pathological entity, but rather a group of symptoms dependent upon disease or injury of the motor area of the brain or of the meninges, or sometimes upon an actual absence of a part of the brain. It may be congenital or acquired. Difficult labor, precipitate labor, forceps delivery, syphilis and the acute infectious diseases of childhood are all regarded as causes. Meningeal hemorrhage is a frequent cause. The condition may accompany hydrocephalus, microcephalus and porencephalus. It may appear as a hemiplegia (affecting one side of the body), as a paraplegia (affecting the lower extremities), a diplegia (upper and lower extremities) or as a monoplegia. The importance of the various causative factors is differently reckoned by various authors<sup>1</sup>.

Pathological Anatomy: The essential pathological factor, whatever the ultimate cause, is a degeneration or absence of a portion of the motor area of the brain and of the tracts leading from it. The anterior pyramids of the cord take part in the degeneration. As a rule, one side of the brain suffers more than the other. The hemorrhage, if that be the cause, is meningeal, rarely in the internal capsule, as in an adult.

### SYMPTOMATOLOGY.

The clinical condition we are discussing consists of a muscular weakness or paralysis, to which a spastic element is added. The muscular weakness ranges in wide limits in extent and severity. Feeble-mindedness or idiocy may be present. Idiocy is more frequent in the diplegic and paraplegic cases than in the hemiplegic. Athetoid movements and epilepsy often are as-

<sup>1</sup>Little. *Transactions of the London Obstetrical Society*, 1862.

McNutt. *Amer. Jour. of Obstetrics*, 1885.

Vogt. *Handbuch der Neurologie*, 1912.



soeiated with the paralysis in its later stages, and secondary contractures are common. The reflexes are generally increased. If the eye muscles are affected, strabismus may result; if the muscles of speech, disturbance of articulation. Atrophy of the affected limbs, rarely extreme, is yet usually present to a certain extent. Disturbances of sensation are seldom seen.

Not all the muscles are equally affected. The paralysis affects by preference the extensor muscles. Thus the typical attitude may be said to be flexion of the fingers and of the elbow, flexion and adduction of the thigh, semiflexion of the knee, and plantar flexion of the foot. The forearm is semipronated. The spasm present in the unaffected muscles is often accentuated by the attempt to carry out voluntary movements—"intention spasm." In the earlier stages of the condition the spasm can be passively overcome, but later on, when contractures are firmer, this may be difficult or impossible. The characteristic attitude assumed by the affected member may be said to be the sum of the paralysis of certain muscles and the spasm of others.

Spastic paralysis is usually divided into two main classes, namely<sup>1</sup> hemiplegia, and<sup>2</sup> diplegia and paraplegia. The hemiplegic cases are similar to those occurring in later life, but the spastic element is greater. The upper extremity is usually more severely affected than the lower.

Diplegia and paraplegia, as a rule, show a greater amount of cerebral damage, have a worse prognosis, and are more often accompanied by idiocy.

Besides the pronounced and well-marked cases there are many that might be regarded as "abortive." They appear as localised weakness and clumsiness of an extremity, or perhaps as a localised increase of reflexes.

Patients suffering with spastic paralysis are often brought to the orthopaedic surgeon on account of a failure to walk at the

usual time. In the hemiplegic type, the difference in the two sides is immediately apparent. In the paraplegic cases, when an attempt is made to stand the child on its feet, the trunk bends forward, the thighs are tightly adducted, the knees are in semiflexion, and the feet are plantar flexed, so that the soles do not touch the ground.

In almost all but the severest cases the patient ultimately learns to walk, and if seen after walking has begun, the gait is quite characteristic. It is "jerking" and spastic. Usually the heel does not touch the floor. When the upper extremity is affected the forearm is held to the body in flexion and semipronation.

#### PROGNOSIS.

The prognosis varies as the extent of the damage to the brain. Much can be done to improve the milder cases, but the percentage of mortality is very high. Few of these patients reach adult life. In a general way the prognosis may be said to vary largely as the intelligence.

#### TREATMENT.

The milder cases are best treated by a combination of attention and neglect. The paralysed muscles should be treated by massage, and the joints of the affected limb should be put repeatedly through their normal range of motion every day. Then the patient must be encouraged and urged to use the extremity himself. This will be difficult, not only on account of the paralyses, but also on account of the mental impairment so often present. The comparative helplessness of the child causes the parents to spare it every exertion, and thus to remove an incentive to self-help. The child should be compelled to exert itself.

In severe cases it may be necessary to correct the deformities under ether, either manually or by the division of tendons. When tendons are divided, the deformity must not be overcorrected, for the spastic state of the muscles might result in non-

union of the cut ends. After the correction the limbs should be put in plaster for a couple of months, and then exercise and passive motion must be instituted as in the lighter cases. Otherwise the deformities will certainly return, for nothing has been done to remove the cause of the condition. Possibly a light brace may be worn to prevent the return of the deformity. The strange influence for the better that correction of deformity and plaster splints have on the mental condition of the patient has often been noted.

Allison<sup>1</sup> has published some excellent results of cases treated by injecting with alcohol the nerves supplying the spastic muscles, and by implanting a portion of the cut end of the distal portion of the paralyzed nerve into the "spastic" one. Thus, in the typical thigh paralyses he injects the obturator nerve with alcohol to relax the spasm, and bringing over the cut distal end of a portion of the anterior crural nerve, implants it into the obturator nerve.

Foerster<sup>2</sup> has devised an operation for relieving the spasticity by dividing the posterior roots of some of the lumbar and upper sacral spinal nerves. Its use is to be weighed in certain of the very severe cases of paraplegia and diplegia, when the patients possess a reasonable amount of intelligence. After this operation the treatment by exercises and muscle training is to be pursued with the same vigor and persistence as after any other.

The most severe cases—those with extensive paralysis and idiocy—defy all treatment, but that many cases, severe and mild, due to hemorrhage, might be cured if the clot were soon enough removed, seems possible.

<sup>1</sup> Muscle Group Isolation and Nerve Anastomosis in the Treatment of the Paralyses of the Extremities. *American Journal of Orthopaedic Surgery*, Vol. 8, 1910-11.

<sup>2</sup> Mitteilungen aus den Grenzgebieten des Medezin und Chirurgie, 1909-2, S. 493.

See also Clark and Taylor, *N. Y. Medical Journal*, April 13 and 20, 1912.

Frazier, *Surgery, Gynecology and Obstetrics*, Vol. XI, 1910, p. 251.

## Constituent Societies

### SAN LAUIS VALLEY.

The San Luis Valley Medical Society met at Alamosa on the evening of June 4th. The following doctors were present: Drs. Pollock, Trueblood and Chapman of Monte Vista; Dr. Long of Moffat; Dr. Horton of Hooper; Dr. McFadzean of Del Norte; Dr. Shelton of Antonito; Dr. Nassaman of Pagosa Springs; Dr. Haller of Platora; Drs. Curfman and Hansen of Salida; Drs. Davlin, Morse, Smith and Heriman of Alamosa.

After a banquet the regular program was carried out. Dr. Morse of Alamosa read a well-prepared paper on "Intoxication of Infancy." His treatment is principally dietetic. If child does not improve in forty-eight hours under starvation treat and plenty of water, the prognosis is bad. He uses as first food skimmed milk, diluted with barley water, using required amount of Mead's dextro-maltose or Loeffland's Malt Soup. Gradually change to whole milk. Never use milk sugar in artificial feeding.

Dr. Trueblood's paper was "Puerperal Infection." His opinion was that a policy of non-interference as regards emptying uterus should be carried out except in cases of suprapia. This seemed to be the opinion of all who discussed the paper.

Dr. Curfman of Salida was the guest of the society and read a splendid paper, "The Rate of Catharsis in Operative Conditions."

The paper sought to bring out the later facts established in the physiology of the intestinal tract and from these drew the conclusion that all catharsis preliminary to anesthesia especially in abdominal conditions was harmful. Preliminary dieting and the use of enemata was advocated. Enemata were also advocated in post-operative treatment instead of catharsis.

## Book Reviews

**The Psychoneuroses and Their Treatment by Psychotherapy**, by Professor J. Deperine and Dr. E. Ganckler of Paris, France. Authorized translation by Smith Ely Jelliffe, M. D., Ph. D., New York. Cloth. Pp. 395. Philadelphia and London. J. B. Lippincott Company. 1913. Price, \$4.00.

This is perhaps the most satisfying treatment of the subject of the functional disorders of the nervous system, more especially touching upon those based upon emotional factors and their treatment by psychotherapy, that has so far appeared. It succeeds the work of Dubois, which received so much attention several years ago, when its English appearance was made possible by the same translator, who comments in the present volume upon the incompleteness of Dubois, the absence of sufficient emphasis upon the in-

stinctive or emotional side of the human machine in its physical relations.

Functional manifestations include, according to the opening lines, "all those persistent symptoms and troubles of which neuropaths complain and which have been created in these patients without any antecedent lesion of the body." Then follows chapter I., with a consideration of the functional manifestations of the digestive system; this by those of the urinary organs, those of a genital nature, of the respiratory apparatus, cardio-vascular apparatus, cutaneous symptoms, neuro-muscular apparatus, disturbances in sensibility, etc. Chapter XV, entitled: "What Does Not Belong to Neurasthenia What Does Not Belong to Hysteria," is followed by a chapter upon "How one Becomes Neurasthenic," then psychic treatment and what are termed "adjutant processes" receive attention. Methods of examination and questioning, followed by the author, are described with clearness borne only in the mind of an experienced and careful observer. The concluding chapters on "Psychiatry as Regarded by Physicians and Patients" and the last on "Prophylaxis and the Moral Role of the Physician," is followed by the personal conclusions of the author.

It is a most readable volume, clearly practical and free from the objections of most psychical works.

Contrary to most recent works in this field, no mention of the Freudian psycho-analytic methods is made, it evidently being the belief of the writers that the vast majority of neuropaths may be very favorably treated psychotherapeutically before they have reached the degree requiring those methods. Much interest is added by the numerous citations from the records of the authors. The reading of the work should add much to advance this neglected branch of medicine and to place those over-arduous psychic practitioners and healers, as well as those cults deriving their sustenance from their influences upon the lay mind, in their proper position before the broad-minded therapist. G. A. M.

**Diseases of the Nose, Throat and Ear**, by Francis R. Packard, M. D., Philadelphia. Price, \$3.50. J. B. Lippincott Company, Philadelphia and London.

In this, the second edition of a book already known to the profession, the author has, in three hundred and fifty pages, given the modern essentials of diseases of the ear, nose and throat. In this book many valuable changes have been made from that of the first edition. Some chapters have been completely re-written; and in many instances, changes made to conform to the more approved methods of the present day. While some books teem with theory, this one has the distinguishing feature of being practical.

The conclusions given by the author are the result of many years' experience in large hospital clinics and as a post graduate teacher of graduates in medicine.

The illustrations, which are largely original with the author, are many and well chosen.

The treatment of the fundamental branch anatomy, while not exhaustive, is for ordinary purposes complete, clear and concise.

In the matter of diagnosis, as well as treatment, both medical and surgical, positive, definite instructions are given; leaving no room for doubt as to the procedure indicated in a given case.

In general it should be said that the author aided by several competent surgeons, has in this new book, presented the essentials of diseases of the ear, nose and throat in a way admirably adapted to the needs of students and general practitioners of medicine.

FRANK ALBERT BURTON

#### DIABETIC FOODS.

The preliminary report of an investigation made in regard to diabetic foods for sale in the United States made at the Connecticut Agricultural Station by Drs. Mendel and Street is published by J. P. Street, New Haven, Conn. (Journal A. M. A., June 28). The present state of the market is unsatisfactory. The unsuspecting patient is led to purchase foods generally at an exorbitant price which may be positively harmful to him. It would seem, considering the other easy methods of supplying all the carbohydrates good for him, that a low percentage of these substances should be a requisite in diabetic food. A total of 108 samples of 68 brands of flours and meals is included in the report. Sixty-seven of these were sold as "gluten" flours, twenty of which did not satisfy even the low government standard of 35 per cent. protein. Twelve samples contained less than 13 per cent. carbohydrates, the remainder ranging from 28 to 76 per cent. The soy bean flours contained from 23 to 26 per cent. of carbohydrates, the almond meals 17 per cent. and the cotton seed flour 21 per cent. Other "diabetic" flours, not specially sold as gluten flours, contain from 67 to 80 per cent. The purchaser at present can obtain preparations containing from 87 to 11 per cent. of protein and from 4 to 67 per cent. of carbohydrates at a cost of from 9c to \$1.56 per lb. Analyses of diabetic bread, breakfast foods, etc., showed similar excess of protein in the great majority. Almond pastes, peanut butter and preparations of that class were generally suitable diabetic foods, though some contained 40 per cent. and over of carbohydrates. The investigation was widened to the extent of examining a number of wines, presumably "dry," and a list of those having a low sugar content is given as well as of a number of brands sold as a diabetic food containing less than 35 per cent. of carbohydrates, given in the order of their carbohydrate contents. The article should be a good guide in prescribing diet for diabetic patients.

#### No Time.

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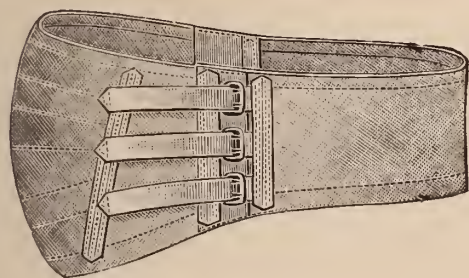
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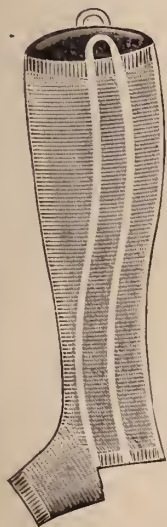
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# The Colorado State Medical Society

INCORPORATED NOVEMBER 1, 1888.

The Next Meeting Will Be Held at Glenwood Springs, October 7, 8, 9, 1913.

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Term expires.

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State Organizer.

Frederick Singer, Pueblo.

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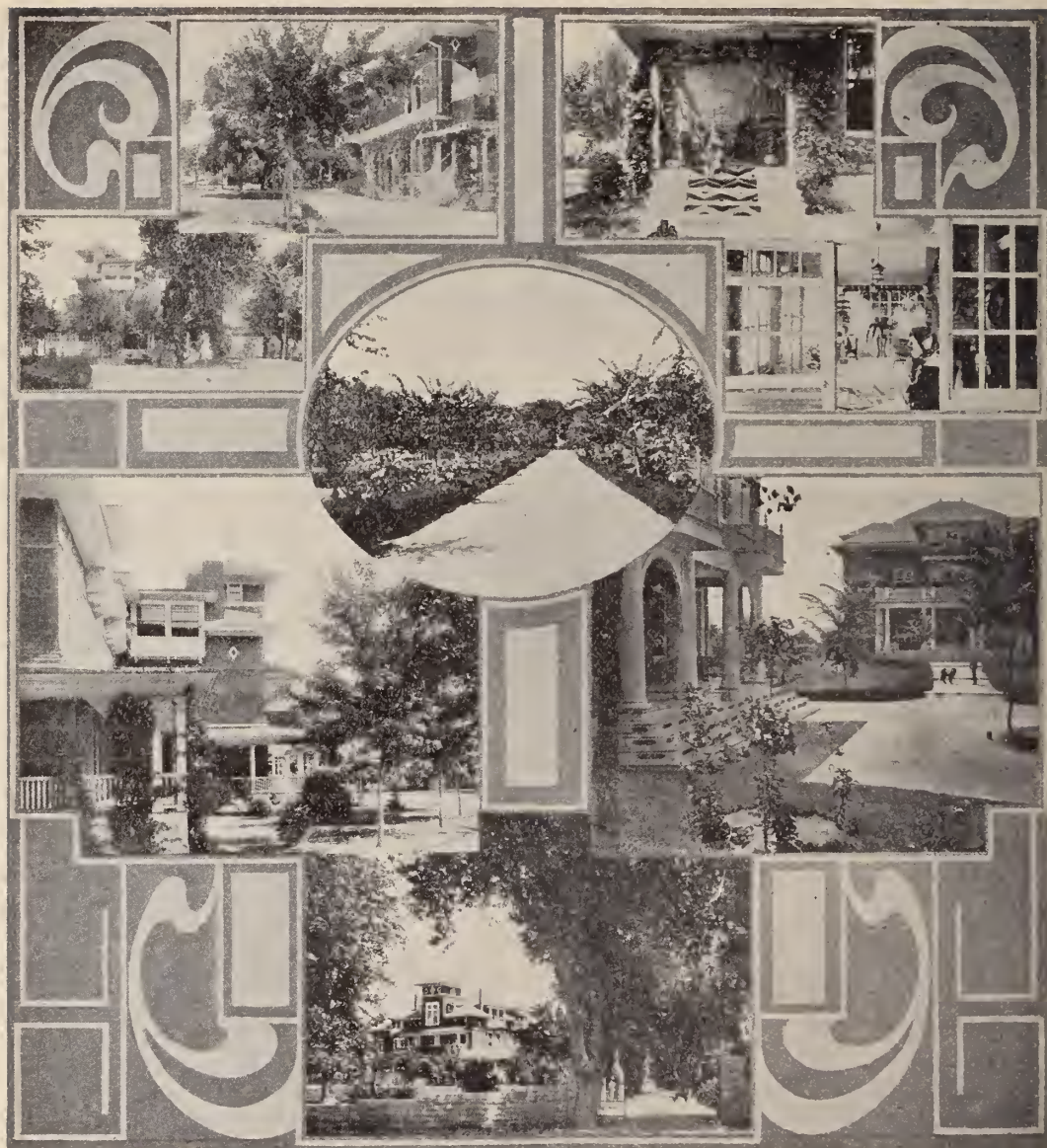
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# Colorado Medicine

OWNED AND PUBLISHED BY THE COLORADO STATE MEDICAL SOCIETY

## PUBLICATION COMMITTEE.

Charles S. Elder, M. D., Denver

George A. Moleen, Denver

Edward Jackson, M. D., Denver

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SEPTEMBER, 1913

NO. 9

## Editorial Comment

### THE FORTY-THIRD ANNUAL CONVENTION OF THE COLORADO STATE MEDICAL SOCIETY.

On October 7 you will be present at the Hotel Colorado in Glenwood Springs. At 9 o'clock of that day the gavel of President Black will fall like a steamdriven hammer in a Pueblo steel mill. Gentlemen, you will be in order—hands in order, feet in order and thoughts in order. This, then, is the time, the place—yes, and the girl, too, for at exactly this time the youngest handmaid of medicine—Urology—will appear in X-ray attire and whisper to you her most intimate secrets. This instructive entertainment is not an exception; it is an example of the program in store for you at this meeting. If it interests you and calls for more, you will find the whole illuminated, prancing procession of papers (to use a circus poster expression) set forth in this issue. For most of the essays abstracts have been furnished. One may know, then, not only the subjects but more nearly the substance of each paper. Read them over, think them over and pick out one or more to discuss. If you go to the state meeting don't be a silent partner, but talk. If you are wrong you will learn something. If you are right others will learn something.

Go to Glenwood Springs for science or for fun. If for science, be a maker of it. If for fun, it is quite evident that you will not stand by the pool and watch others do the swimming. That recalls that there is to be no charge imposed upon the members of the society for the use of the swimming pool. It's free, and every member of the society is expected to leave both diffidence and dignity at home, to take part in the discussion of papers and to take his turn at the rollerless coaster (if that should be its name).

The Garfield County Medical Society is making strenuous efforts for our entertainment. This we appreciate, but we do not ask it. There is no dearth of entertainment when good fellows get together, even if the stein of the song is but an ornament on the plate rail instead of a foaming tempter on the table. If time should drag, Dr. Hall will tell the most unbelievable of all his impossible stories, and Dr. Jayne may, if pressed with a little importunity, show us the very latest wiggle of the tortuous tango. Many others of entertaining talent will be there.

The Denver & Rio Grande railroad will run a special train to Glenwood Springs, leaving Denver about 9 o'clock Monday morning, October 6. The round trip fare will be \$8 for this train only. Those taking the train at Denver *will be supplied with tickets on the train* by a special agent

of the company, hence the purchase of tickets before getting on the train is unnecessary. At other stations along the line tickets should be bought of the local ticket agent before getting on the train.

This train will be equipped with first-class day coaches and an observation parlor car. One Pullman coach will be provided for those who desire to pay the extra Pullman fare, and a dining car.

Returning, there will be a special train leave Glenwood for Denver on Thursday evening, October 9, at about 7:30 o'clock. This train will be made up of Pullman equipment only. In order for the company to know how many coaches to provide, everyone who desires to take this train must make his Pullman reservations with the agent at Glenwood Springs by Wednesday noon, October 8. *For those who will not be able to take this train* a rate of one fare and a fifth will be made over all the D. & R. G. lines.

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### AUTOPSIES.

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The ridiculously small number of post-mortem examinations made in this country is a standing reproach to American medicine. An investigation conducted by a committee of the New York Academy of Medicine\* reveals how backward our public hospitals are in this important detail as compared with European institutions. When the Allgemeines Krankenhaus of Vienna can show 1866 autopsies in a year out of a total death rate of 1867, (99.9%) the record of Bellevue Hospital of 11.6% looks sickly in comparison. Some American institutions make a better showing; thus Johns Hopkins Hospital gives a percentage of 62.6 and San Francisco City Hospital, 45.1. Other institutions make a still poorer showing than Bellevue.

Five cases are given by the committee in

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\*Journal A. M. A., June 7 1913; also reprinted in pamphlet form.

explanation of our pitiful results: (1) Adverse public opinion and prejudice, which, it is claimed, are stronger in this country than abroad; (2) the existing law, giving the next of kin the right to refuse an autopsy; (3) undertakers and burial societies; (4) the negligence of the hospital authorities in not procuring a signed permit from the nearest relative of every patient admitted; (5) the anatomical department of medical schools in rejecting bodies for dissecting purposes that had been previously "posted," thus compelling the undertaker, who has the contract of burying the unclaimed dead, to refuse post-mortem examination.

How do the Colorado hospitals rank in the matter of autopsies? Private institutions, of course, are more or less restricted in this regard. Some of the sanatoria for tuberculosis present fairly good records. The best criterion, however, for a proper estimate, both as to capacity, the death rate and the number of possible autopsies, is the City and County Hospital of Denver. Be it said with shame that our state is far behind the poorest of the list published by the committee. Out of 514 deaths in 1912, only eighteen came to autopsy—a post-mortem rate of 3.5 per cent. This is certainly a most deplorable state of affairs. With this wealth of scientific material, only one autopsy in three weeks. *Hinc illae lachrymae.*

The causes of this inactivity in post-mortem investigation are not quite the same as in this region as those assigned by the committee. We have, of course, the identical struggle against prejudice and superstition, but not to the same extent as in New York, with its larger foreign population. In our experience, the native-born are more easily persuaded to grant an autopsy than the immigrant class. Abroad the hospitals are given better facilities by state regulation rather than by enlightened public opinion. Nor should we blame the



undertaker, whom we have always found willing to co-operate with the physician who is seeking a post-mortem examination. In fact, the former, by the exercise of tact and diplomacy, more frequently receives the coveted permit than does the plea of the attending physician.

Whether the County Hospital in the present state of public opinion can demand from the next of kin, prior to the admission of a patient, authorization for an autopsy in the event of death, is very questionable. The recommendation of the committee to interest the public in this important matter through the press and other agencies is most excellent advice. To carry out any beneficent measure we must have the people behind us.

The old-time policy of our profession to withhold matters medical from the laity is rapidly giving way to the new tactics of publicity. Through articles in the press and by the publication of leaflets and holding public lectures it will be easy to demonstrate to the voter that the progress of scientific medicine is absolutely dependent on the facilities for post-mortem examinations. A campaign of this kind will eventually bring about legislation making it compulsory to hold autopsies on every case that dies in a public institution.

Before we come to the public, however, with this request, we must first clean our own premises. Have we, as physicians, always exhausted every effort to verify our diagnoses at the autopsy table? How often the mark is missed is revealed in Cabot's well-known tables of percentages of correct diagnoses.

In an endeavor to find the causes for the relatively small number of autopsies at the County Hospital, the lack of interest shown by the staff was given as the excuse. With all the obstacles placed in our path by adverse legislation, it is still possible by the employment of diplomatic measures to hold post-mortems in over half of the cases.

If the internes do not evince the proper interest and the hospital management does not see that autopsies are held as part of its routine, the fault lies in a great degree with the members of the visiting staff who do not always insist on it, and occasionally even neglect to attend the post-mortem when they are called. The staff must take the initiative in this matter and encourage the hospital authorities in carrying out this essential detail of its medical department.

In private practice, too, scientific medicine will be greatly advanced by the endeavor to secure autopsies.

Virchow truly has said that for medicine to be an exact science we must learn to think anatomically. It is only through autopsies that "Death rejoiceth in succouring Life."

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#### JAMES MILTON BLAINE.

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During the past month the profession of Colorado has lost one of its long-time members. Dr. James Milton Blaine died in Bedford Springs, Va., after an illness consequent upon a right-sided paralysis, which had rendered the doctor incapable of work for the past year. Doctor Blaine was born in Pennsylvania in 1855, a graduate of Jefferson Medical College in 1881 and was licensed in Colorado in 1896. His practice was limited to skin and venereal diseases, and through his remarkable judgment, keen perception and accurate reasoning, as well as his affable personality, his name was known throughout the profession of Colorado as well as adjoining states. As Secretary of the Colorado State Medical Society, serving from 1902 to 1906, he was very active in the reorganization, and, in fact, it was principally through his efforts that this valuable change was consummated. Touring the state he did much to bring together the refractory elements and harmonizing conditions which led to the organization of a number of County Soci-

eties. He occupied the position of editor of Colorado Medicine, being the second after the establishment of the journal, and through which his ready wit covered his deeper criticisms whenever he felt the profession's best interests were to be so subserved. He was ever mindful of the high ideals of the profession and promptly and forcibly expressed himself to those whom he believed to be opposed to them; all of which made for him a characterization of a strong friend and a strong enemy, with the preponderance of the former. His jovial manner, his ready wit and his genial, whole-souled good-fellowship has already been missed in the medical gatherings by his professional brethren and those who were intimate enough to have known him as "Uncle Jimmy." The student body loved him to a unit, where he always evidenced himself as a friend of the undergraduate during the occupancy of the chairs of dermatology in the three schools of medicine that have existed in Colorado.

Doctor Blaine is survived by his wife and two daughters. His remains were interred in his old home in Pennsylvania.

G. A. M.

#### NOTICE.

The Colorado Alumni Association of the Northwestern Medical School will meet in Glenwood Springs at some time during the meeting of the Colorado State Medical Society.

The natural history of pulmonary tuberculosis, involving as it does gradual alteration by insensible steps of the normal structure, size and elasticity of the thoracic viscera, would seem to imply that we can never hope to determine by physical means the very advent of the disorder. If our physical examination reveals lesions which can be definitely ascribed to tuberculosis, the patient is already far advanced on a course which, if not interrupted, will lead to a fatal termination. But there is a prologue to this pathologic history in which the plot of the story is foreshadowed by allusion and innuendo. By fortunate chance the alert critic of the prologue can, as at a rehearsal, completely change the finale of the contemplated play.—Henry Se-wall.

**Mistakes in Diagnosis of Appendicitis.**—De Quervain has been examining the records of the different Swiss hospitals during the last five years and has found nearly a hundred cases in which an operation was done on the erroneous diagnosis of appendicitis. In considerably more than half the cases the trouble was some acute surgical abdominal affection which required a laparotomy, so that no harm was done by the operation, but in about twenty cases no operation was actually needed. In seven cases the trouble was really pneumonia; as it commenced with abdominal symptoms it was mistaken for appendicitis. He warns that children are liable to vomit on the slightest excuse, without necessarily having anything the matter with stomach or bowels and they are liable to run up a fever even more readily. Children are also inclined to locate at the umbilicus anything wrong within. The problem is rendered still more difficult by the cases of pneumococcus peritonitis, especially in girls, and liable to follow pneumonia. With older children and adults, the decision to operate is made more readily than for children under five, while appendicitis is relatively rare under this age. In three cases typhoid fever was mistaken for appendicitis; this is particularly liable to occur when the patient and family give misleading accounts of the antecedents. Whenever the general depression and headache cast doubt on the diagnosis of appendicitis, it is typhoid bacilli and put away the bistoury. In seven neuropathic cases the patients simulated the symptoms of appendicitis and were needlessly operated on.

He repeats the warning of the English surgeon to be wary in accepting the diagnosis of appendicitis in women when the hymen is not intact. Minor accessory details may suggest the true cause of the disturbances in a spontaneous or criminal abortion; vagueness as to the date of the last menses, and the worried expression of the patient and her fiancé; slight pressure on the breast may cause exudation which clears up the diagnosis at once. In one case a young woman appeared with the diagnosis of appendicitis the day after a ball; her temperature was over 104 F. and face congested. Examination disclosed a staphylococcus peritonitis from recent rupture of a right pyosalpinx. With rupture of a pregnant tube a movable area of dullness develops almost at once, and an effusion can be palpated in the pouch of Douglas, while the tint of the ears, lips and nails shows the anemia. Add to this vagueness as to the last menstruation, and the assumption of appendicitis can be dropped. In conclusion de Quervain says that knowing the dangers of temporizing with true appendicitis, that surgeon is the bravest who does not fear occasionally to run the risk of a false diagnosis. *Revue Medicole de la Suisse Romande*, July.

"You must take exercise," said a physician to a patient. "The motor car in a case like yours gives the best exercise that—"

"But, doctor, I can't afford to keep a motor car," the patient growled.

"Don't buy, just dodge!" said the doctor.—

**PROGRAM****FORTY-THIRD  
ANNUAL CONVENTION****Colorado State Medical Society****GLENWOOD SPRINGS, COLORADO  
OCTOBER 7, 8, 9, 1913***Meeting Place :  
Hotel Colorado***TUESDAY, OCTOBER 7.****FIRST DAY, 9 A. M.****Papers.**

1. "SOME EXPERIMENTAL SURGERY UPON ANIMALS TO DETERMINE THE INFLUENCE OF URINARY STASIS UPON UNILATERAL KIDNEY INFECTIONS, WITH REPORT OF AN ORIGINAL METHOD OF NEPHROPEXY TO SECURE COMPLETE INTERNAL DRAINAGE OF KIDNEY PELVIS."

BY ORA S. FOWLER, B. S., M. D.  
DENVER, COLO.

DISCUSSION OPENED BY LEONARD  
FREEMAN, DENVER.

A series of ten animals were taken and partial obstruction produced in one ureter, above which obstruction live bacilli were injected either into the renal artery (hematogenous infection) or into the kidney pelvis (ascending infection); for comparative study another series of ten were taken into which live bacilli were injected into the renal pelvis, but no obstruction having been produced. The work has been carried on with the hope that we may offer a reason for the various unilateral kidney infections.

Also an original method of nephropexy is reported and described, which insures perfect and free internal drainage of the kidney pelvis, establishing here the same principles as apply to other infected cavities or hollow viscera.

2. "A PLEA FOR ACCURATE DIAGNOSIS IN LESIONS OF THE URINARY TRACT."

BY THOS. L. HOWARD, M. D.  
DENVER, COLO.

DISCUSSION OPENED BY OLIVER LYONS,  
DENVER.

Urology is a distinct specialty. Those who would treat lesions of the urinary tract or distinguish them from diseases of other abdominal organs must make themselves familiar with the methods and the matter of urology. Possibility of confusing stone in the ureter or intermittent hydronephrosis with appendicitis. The distinction between tumors of the kidney and of other abdominal organs. The early diagnosis of tuberculosis of the kidney. A consideration of essential hematuria. The possibility of more exactitude in the diagnosis of intravesical growths. Exhibition of illustrative specimens and x-ray plates.

3. "SOME RECENT METHODS OF INVASION OF THE URINARY BLADDER."

BY CHAUNCEY E. TENNANT, M. D.  
DENVER, COLO.

DISCUSSION OPENED BY LEWIS H. McKINNIE, COLORADO SPRINGS.

Cystostomy is an exceedingly old procedure. Few operations have so taxed the surgeon's skill as operations upon the bladder.

To leave a patient enfeebled with age, and prostrated from surgical shock, with uncontrolled urinary drainage, is not conducive to a speedy convalescence.

Therefore, if it is possible to control or



eliminate this problem of uncontrolled drainage, we would secure comfort for our patients during their convalescence, and reduce the mortality of these operations.

Tradition and custom have taught us that if we must open the bladder, we must also maintain this opening for drainage until nature has built about the opening a sufficient amount of granulation tissue to protect the patient from urinary infection, and eventually to close the incision. Several methods have recently been proposed which have for their purpose the immediate closure of the bladder following operation. Drainage is then instituted either through the urethra by catheter, or by a small caliber rubber tube placed at one angle of the incision. This has been applied both in the supra-pubic and perineal operation. Bleeding over protracted periods and severe infection are the two conditions contra-indicating such a course, both of which can be largely controlled by properly applied special preparation and technical methods.

Reference is made to the methods of immediate bladder wall closure in the supra-pubic, perineal and intra-peritoneal methods, and to the rubber dam protector where drainage is maintained after the supra-pubic invasion with open method.

4. "SOME FACTS ABOUT THE NORMAL KIDNEY AND URETERS SHOWN BY MEANS OF RADIOGRAPH. A STUDY FOR THE PURPOSE OF DIFFERENTIATING NORMAL FROM PATHOLOGICAL CONDITION."

By WILLIAM M. SPITZER, M. D.  
DENVER, COLO.

DISCUSSION OPENED BY SAMUEL B. CHILDS, DENVER.

Concise history of radiography of the genito-urinary tract; reasons for, and the necessity of, this work; how normality of cases was determined; technique followed; improper technique; advantages of stereoscopic pictures; why the kidney should

show on the plate; size and shape of pelvis; content of pelvis in c.c.; number of calyces; course of catheter; length and shape of ureter; curves, bends, kinks, angulations, etc., of ureter; position of pelvis in standing and in reclining postures of the individual, and the amount of difference between them, over and above the movement caused by respiration; conclusions.

5. "TRAUMATIC SARCOMA."

By OSCAR N. SHERE, M. D.  
DENVER, COLO.

DISCUSSION OPENED BY CHARLES A. POWERS.

Importance of trauma as an etiologic factor in the production of sarcoma. Discussion of the pathology. Differentiation between "trauma aperta" and "trauma occulta" and their relationship in the development of sarcoma. Review of two thousand cases collected from the literature. Advancement of an original theory about the genesis of this malignant growth. Presentation of case histories and operative results from personal observation of this form of tumors. A plea for the earlier recognition of existing sarcoma following injury.

6. "REPORT OF A CASE OF ARRESTED DEVELOPMENT OF CANCER AND A REVIEW OF THE SUBJECT."

By GEORGE A. BOYD, M. D.  
COLORADO SPRINGS, COLO.

DISCUSSION OPENED BY WILLIAM W. WILLIAMS, DENVER.

Carcinoma of breast. Radical operation, August, 1911. April 12, 1913, laparotomy for obstruction of bowel, caused by large cyst in end of appendix adherent to ileum. Cyst not examined. Liver was studded with carcinoma both on upper and lower surfaces. Much enlarged. Gradual development of oedema of lower extremity and abdominal ascites. Abdominal paracentesis fourteen times between December 17, 1912, and March 4, 1913. Lymph glands

of neck, axillæ and groins enlarged. Emaciation, cachexia and exhaustion marked. Hemorrhage into abdomen at second paracentesis. Again, in January and February patient began to improve; glands diminished in size; aduna and ascetis ceased; appetite returned; blood and strength improved. Present condition.

Case compared with similar cases. What is the explanation. Causes known to increase all growth, and to retard it.

#### 7. "AN OPERATION FOR COMPLETE PROLAPUS OF UTERUS AND CYSTOCELE."

BY HERMAN GRAVES, M. D.

CANON CITY, COLO.

DISCUSSION OPENED BY ALEXANDER C. CRAIG, DENVER.

Comments on the different old operations. Pointing out their defects.

A description of the new operation, originated chiefly by Dr. Thomas J. Watkins of Chicago.

Most of the cases of serious prolapsus occur in women close to or past the menopause. Consequently there is no objection to this operation on account of possible pregnancies.

In this operation a transverse incision is about two inches in length is made through the mucosa interior cervix, at about the junction of the cervix and the body of the uterus.

From the middle of the incision another one is made extending up close to the urinary meatus. The flaps are dissected back a short distance. The uterus then is dissected free from the bladder; the fundus is caught and pulled down into the vagina; the fundus is then securely stitched by heavy catgut sutures just beneath the meatus; the incisions are then closed over the body of the uterus, each stitch taking a small bite into the body of the uterus as it is inserted; no drainage is used.

This operation accomplishes desirable things; it cures the cystocele because the

uterus acts as a plug in the gap in the pelvic floor and holds the bladder above it. The uterus is sharply anteverted and consequently needs very little support.

#### 8. "TRAUMATIC HYSTERIA."

BY EDWARD DELEHANTY, M. D.

DENVER, COLO.

DISCUSSION OPENED BY GEORGE A. MOLEEN, DENVER.

#### 9. "TECHNIQUE OF ARTIFICIAL PNEUMOTHORAX."

BY HERMAN SCHWATT, M. D.

EDGEWATER, COLO.

DISCUSSION OPENED BY GEORGE R. POGUE, GREELEY.

- I. The Forlanini and the Brauer methods.
  - (a) Their respective merits.
  - (b) Advantages of the Forlanini method.
- II. Apparatus and instruments used for the production of artificial pneumothorax.
- III. Preparation and position of the patient.
- IV. The technique of the Forlanini method.
- V. Complications and accidents and how to avoid them.
  - (a) Gas embolism.
  - (b) Shock.
  - (c) Emphysema.
  - (d) Effusions.
- VI. General considerations.

#### 10. "INDUCED PNEUMOTHORAX; ITS USE AND ABUSE. DEMONSTRATED BY LANTERN SLIDES."

BY ARNOLD S. TAUSSIG, M. D., AND

WILLIAM N. BEGGS, M. D.

DENVER, COLO.

DISCUSSION OPENED BY SHERMAN G. BONNEY, DENVER.

Origin and development of the operation.

Technique of operation.

Diseases that may be benefited by the operation.

Method of selecting cases.

Danger during and after the operation.

Understanding between patient and physician as regards dangers of the operation and likelihood of benefit from the treatment.

Ideal cases for use of method.

Unfavorable cases.

Effect of operation upon other organs of the body.

Effect on lung of long-continued collapse.

Results that may be expected.

Brief review of statistics of published cases.

Report of some interesting cases.

Need of x-ray examinations before and during treatment.

Interpretation of x-ray findings.

## **TUESDAY EVENING.**

**7:30 P. M.**

**Annual Address of the President.**

**BY JOHN A. BLACK, M. D.**

**PUEBLO, COLO.**

**ADDRESS—"CORELATED BILIARY TRACT AFFECTIONS."**

**BY LEWIS L. MCARTHUR, M. D.**

**CHICAGO, ILL.**

**9:30 P. M.**

**President's Reception and Ball.**

## **WEDNESDAY, OCTOBER 8.**

**SECOND DAY, 9 A. M.**

**Papers.**

### **1. "HISTOPATHOLOGY OF THE FAUCIAL TONSIL."**

**BY THOMAS E. CARMODY, M. D.**

**DENVER, COLO.**

**DISCUSSION OPENED BY FRITZ LASSEN, PUEBLO.**

Changes in tonsil as a whole. Hypertrophy of organ. Atrophy. Changes in cells. Contents of crypts, cellular and bacterial. Plasma cells. So-called fuchsinophile cells

and their similarity to cells found in other parts of the body. Changes in cells from birth to puberty. Tonsil as a protective organ; as breeding place for bacteria. Conclusions based on examination of tonsils removed by different methods.

### **2. "SUSPENSION LARYNGOSCOPY."**

**BY LORENZO B. LOCKARD, M. D.**

**DENVER, COLO.**

**DISCUSSION OPENED BY FRANK L. DENNIS, COLORADO SPRINGS.**

The suspension laryngoscope is an instrument designed to supplant present methods of direct laryngoscopy, over which it has many advantages.

By means of a laryngeal spatula, a hook-handle with adjustable tooth-plate, and a so-called gallows, the head of the patient is suspended, face upward, beyond the head of the table, in such wise that the mouth, pharynx, larynx and trachea form a straight passage, all parts of which can be thoroughly and leisurely examined without additional instrumentation.

The esophageal aditus and the upper bronchi are likewise frequently brought into view.

Its advantages may be summarized as follows:

(1) A marvellous direct view of the larynx, unobstructed by instruments, is obtainable in practically every case.

(2) Parts not visible with other methods are plainly seen.

(3) A wide approach, for operative procedures, is afforded.

(4) The head is immovably fixed.

(5) The operator sits in a comfortable position and both hands are free for manipulative work.

(6) It is as easily applied to infants as to adults.

(7) Cases and operations can be clearly demonstrated to onlookers.

(8) It may be used under either local or general anesthesia.



(9) The technic is not difficult to one accustomed to other methods of laryngoscopy.

(10) So far no real disadvantages have become manifest.

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3. "THE BACILLUS OZAENAE OF ABEL AS AN ETIOLOGICAL FACTOR IN ATROPHIC RHINITIS."

BY CLAUDE E. COOPER, M. D., AND  
WARD BURDICK, M. D.  
DENVER, COLO.

DISCUSSION OPENED BY CHARLES A.  
RINGLE, GREELEY.

A report of a portion of the investigation of Ozena carried on in Colorado in connection with the collective investigation of ozena in the United States.

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4. "OCULAR INJURIES BY FRAGMENTS OF STEEL OR IRON."

BY WILLIAM H. CRISP, M. D.  
DENVER, COLO.

DISCUSSION OPENED BY JAMES A. PATTERSON, COLORADO SPRINGS.

Paper intended as a protest against routine use of the giant magnet for diagnosis and for removal of magnetic foreign bodies from the interior of the eye. Permanent hand magnets were first used, being succeeded by giant and hand electromagnets. Controversy concerning the relative merits of the two. Important difference of opinion exists as to the danger of an incision through the sclera for introduction of the point of a magnet. Another difference is as to the use of the giant magnet to diagnose the presence of a magnetic particle within the eye. Haab especially advises the use of the giant magnet in this way, and regards localization of the foreign body by the x-ray and sideroscope as useless. Unfortunately, cases are not infrequently seen in which the diagnostic use of the magnet probably so changed the position of the foreign body as, at the same time, to render its extraction more diffi-

cult and its retention more rapidly fatal to the eye. Report of cases in which extraction with a hand magnet through a scleral incision at some distance of time from the injury resulted in preservation of a useful eye.

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5. "EYE LESIONS RESULTING FROM AUTO-INTOXICATION."

BY HENRY M. THOMPSON, M. D.  
PUEBLO, COLO.

DISCUSSION OPENED BY EDWARD C. HILL,  
DENVER.

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6. "ENCLAMPSIA."

BY CHARLES A. FERRIS, M. D.  
DENVER, COLO.

DISCUSSION OPENED BY HARRY FREUDENBERGER, GRAND JUNCTION.

*Etiology.*

- (a) Brief review of many of the theories advanced as to causation.
- (b) Cause of eclampsia from author's viewpoint.

*Treatment.*

- (a) Review of methods with discussion as to their rationale.
- (b) Summary and remarks.

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7. "PUERPERAL INFECTION."

BY ARTHUR R. POLLOCK, M. D.  
MONTE VISTA, COLO.

DISCUSSION OPENED BY FREDERICK W.  
LOCKWOOD, FORT MORGAN.

Importance of the subject of mortality of puerperal infection; difference in methods of treatment; anatomical classification faulty; treatment may be divided into prophylaxis, local, general, specific and surgical.

*Prophylaxis.*—Obstetrics should be conducted with the same aseptic and antiseptic precaution as major surgery. Ovarian remains should be removed early.

*Local Treatment.*—Profession divided into radicals and conservatives as to the question of whether to remove ovarian re-

mains in the presence of infection. Report of the A. M. A. Committee. The let-alone practice the least harmful.

*General Treatment.*—Most important after infection sets in.

*Specific Treatment.*—Disappointing up to the present time; hope for better results in the future.

*Surgical Treatment.*—Should be restricted to definite indications, hysterectomy, ligating of pelvic veins, drainage of abscesses.

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### WEDNESDAY—CONTINUED.

#### 8. "A BRIEF CONSIDERATION OF THE MORE COMMON DRUG ERUPTIONS AND THEIR BEARING ON DIAGNOSIS."

BY GEORGE P. LINGENFELTER, M. D.

DENVER, COLO.

DISCUSSION OPENED BY ARTHUR J. MARKLEY, DENVER.

The necessity of a knowledge of drug-produced eruptions, with their symptoms, and the chagrin, and probable financial loss of the practitioner as a result of failure to make the proper diagnosis.

Cases are cited and illustrated by photographs.

No attempt is made to call attention to the very rare, but rather to the very common eruptions.

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#### 9. "ANESTHETIZATION, THE ANESTHETIZER AND SURGEON."

BY ROBERT R. CHARLES, M. D.

DENVER, COLO.

DISCUSSION OPENED BY HERMAN R. BULL, GRAND JUNCTION.

Some methods formerly employed to produce surgical anesthesia.

Introduction of nitrous oxide, ether and chloroform.

General anesthetic never free from danger. Skilled anesthetizer assists in lessening accidents. All "special" anesthetizers not "skilled." Knowledge acquired by ob-

servation and study and is retained by constant study and practice. To produce an anesthesia in which patient is in a condition as near to a natural sleep as possible should be the aim. The most skillfully administered anesthetic is not always the one with the greatest relaxation of the abdominal muscles.

The choice of anesthetic. Same anesthetic not suitable to every patient. Unreliability of statistics. Law of anesthetic accommodation. Present and after effects must be considered. Some cases in which relaxation occurs slowly or partially.

The anesthetizer must give entire attention to patient. Responsibility is great. Surgeon must depend upon his judgment as to wisdom of continuing operation in some cases. We should give properly the anesthetics which we now employ and not be too eager to try new anesthetics until their worth has been proven.

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#### 10. "ACAPNIA; ITS RELATION TO ANESTHESIA AND SURGERY."

BY CARL G. PARSONS, M. D.

DENVER, COLO.

DISCUSSION OPENED BY HENRY SEWALL, DENVER.

Acapnia—capnia—hypercapnia—eupnea—apnea—hyperpnea—spanipnea—pyknopnea, etc., considered physiologically and pathologically.

A physiological study of the effects on the body of the inhalation and exhalation of various gases.

Acapnia, local and general—its practical importance to the surgeon and anesthetist—causes of acapnia—phenomena presented by patients in the acapnic state—true acapnia a serious condition—acapnia a primary cause of shock in some cases, vasomotor exhaustion in others.

Prevention and treatment of acapnia.

Nitrous-oxid-oxygen anesthesia as a preventive of acapnia during surgical operations.

Clinical benefits obtained from a comprehensive knowledge of the subject.

### WEDNESDAY EVENING.

7:30 P. M.

#### ADDRESS—"A PLEA FOR EARLY OPERATION FOR CANCER OF THE LOWER LIP."

By EMIL H. BECKMAN, M. D.  
ROCHESTER, MINN.

#### "ROENTGEN RAY IN THE DIAGNOSIS OF GASTRO-INTESTINAL LESIONS. DEMONSTRATED BY LANTERN SLIDES."

By SAMUEL B. CHILDS, M. D.  
DENVER, COLO.  
DISCUSSION OPENED BY GEORGE H. STOVER, DENVER.

#### "COLOR PHOTOGRAPHY-LANTERN EXHIBITION."

By BENJAMIN H. MATTHEWS, M. D.  
DENVER, COLO.

### THURSDAY, OCTOBER 9. THIRD DAY, 9 A. M.

Papers.

#### 1. "THE PRESENT STATUS OF RADIUM THERAPY."

By JOHN Q. ALLEN, M. D.  
MONTROSE, COLO.

DISCUSSION OPENED BY GEORGE H. STOVER, DENVER.

#### *The Present Status of Radium Therapy.*

This paper consists largely of a review and ideas gained by a study of "Radium-therapy," written by Drs. Wickham and Degras of Paris. That radium has within the past few years come to be a therapeutic agent of great importance to be reckoned with by the medical man no one will deny. And while the general tone of the investigators above named is of that conservative kind always characteristic of the truly scientific medical man no one can follow their work without catching the enthusiasm and anticipation of what is in the near future for us along this line.

Radium is an element which in a course or series of disintegration consisting of eight or nine stages emits an enormous amount of energy, similar in some respects to the x-ray, and the discovery and study of this new element has upset the whole theory of chemistry.

Another interesting thing to us of Colorado is, that while radium and its value is on the tongue of every one, our state probably contains more radio-active ore than any other spot of like dimensions upon the earth. That we have not recognized this fact to the degree of keeping and using it at home but have allowed a large bulk of it to be clandestinely shipped abroad is a lamentable fact.

#### 2. "THE MODERN SCIENTIFIC PHYSICIAN IN THE MAKING."

By FREDERICK SINGER, M. D.  
PUEBLO, COLO.

DISCUSSION OPENED BY CHARLES B. DYDE, GREELEY.

#### 3. "THE IMPORTANCE OF THE EXAMINATION OF THE CEREBRO SPINAL FLUID IN NERVOUS AND MENTAL DISEASES."

By GEORGE E. NEUBAUS, M. D.  
DENVER, COLO.

DISCUSSION OPENED BY BERNARD OETTINGER, DENVER.

Views as to the origin of the spinal fluid. Normal and pathological spinal fluid.

Analysis of a series of cases of diseases of the brain and spinal cord where the study of the spinal fluid has been of great assistance in arriving at a diagnosis technique.

#### 4. "LUMBAR PUNCTURE CYTOTOLOGY AND SEROLOGY IN 110 CASES OF MENTAL DISEASES."

By CHARLES W. THOMPSON, M. D.  
PUEBLO, COLO.

DISCUSSION OPENED BY HOWELL T. PERSHING, DENVER.

The author describes the technique of lumbar puncture together with its indications.



and therapeutic uses. The laboratory methods made use of in investigating the cerebro-spinal fluid are explained. The origin of the cerebro-spinal fluid; where found, and normal appearance. The mental diseases investigated include general paresis, cerebral syphilis, the arterio-sclerotic group, hysterical and involution psychoses, brain tumor, maniacal depressive and the psychoses of senescence. Results summarized and compared with those of other workers in this line.

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5. "ACIDOSIS."

BY CHARLES H. MEADER, M. D.

DENVER, COLO.

DISCUSSION OPENED BY HENRY SEWALL,  
DENVER.

The acetone bodies are to be commonly and conveniently grouped together as of the same significance. Their chemical relationship is close; their derivation is chiefly from the fats by a process of oxidation in which there is evidence that enzyme action plays a role, and experimental data is at hand suggesting that the liver is the chief site of their formation.

The conditions in which acetone bodies are excreted in pathological amount are varied but fall into several more or less related groups. Diabetes and starvation, infectious diseases and the toxic group, including eclampsia and allied conditions. In the former a deficiency in carbohydrate intake or utilization exists but no liver lesions and carbohydrate therapy is often successful; in the latter, as a rule, no such deficiency is present, liver lesions are prominent and carbohydrate therapy is unsuccessful. It is suggested that a proper carbohydrate supply and enzyme action in the liver may be co-important factors in the maintenance of a proper acetone metabolism, and that the wide variations in clinical types of acetone uric disease and in therapeutic results are to be reconciled on

a basis of the varying degrees to which these factors are affected.

No new or more useful therapy is as yet to be developed from such considerations and well-tried methods remain a chief reliance.

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6. "REPORT OF AN UNUSUAL CASE."

BY HERBERT A. BLACK, M. D.

PUEBLO, COLO.

DISCUSSION OPENED BY JOSIAH N. HALL,  
DENVER.

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7. "THE UROCHROMOGEN REACTION AS AN AID IN THE PROGNOSIS AND TUBERCULIN TREATMENT OF PULMONARY TUBERCULOSIS."

BY SALING SIMON, M. D.

DENVER, COLO.

DISCUSSION OPENED BY CHARLES O.  
GIESE, COLORADO SPRINGS.

A simple, practical guide for the therapeutic application of tuberculin has long been sought. Previous methods have been unsatisfactory for one reason or another.

The presence of urochromogen in the urine has been advanced as a simple indicator for the use of tuberculin, also of great value in the prognosis of tuberculosis.

The urochromogen reaction is exceedingly simple to elicit, requiring little laboratory apparatus. It is usually a forerunner of the diazo reaction. Its constant presence is of grave diagnostic import.

Its appearance in the urine during a course in tuberculin therapy calls for a cessation of the treatment. Its presence in the tuberculous patient contra-indicates its use.

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8. "DIETARY STUDIES IN INSTITUTIONS FOR THE TUBERCULOUS IN THE STATE OF COLORADO. STUDY NO. 2."

BY CHARLES D. SPIVAK, M. D.

DENVER, COLO.

DISCUSSION OPENED BY ALEXIUS M. FORSTER, COLORADO SPRINGS.

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The Jewish Consumptives' Relief Society at Edgewater, Colo.

Description of the location of the Sanatorium. Characteristics of the patients. How a Dietary Study is made. The Dietary Study. Calorie value of food taken per patient per day. Comparison with first study. Conclusions.

#### 9. "THE PRESENT-DAY TENDENCY IN THE TREATMENT OF TUBERCULOSIS."

BY MOSES COLLINS, M. D.

DENVER, COLO.

DISCUSSION OPENED BY GEORGE W. HOLDEN, MONTCLAIR.

Advice of physicians to patients that favorable climatic conditions are not necessary in the treatment of tuberculosis.

Neglect of wise and judicious selection of suitable climate in suitable cases.

Unwise activity of physicians and anti-tuberculosis associations in behalf of unfavorable climates.

Erection of municipal and state sanatoria for *incipient* cases of tuberculosis in these unfavorable climates. Extraordinary expenditures of large sums of money for this purpose.

Possible exaggeration of Sanatorium benefits.

Present conditions in this respect both in this country and abroad.

Comparative value of reports of sanatoria in favorable and unfavorable climates.

Citation of incidents bearing upon the present-day efforts to promote the treatment in all cases of tuberculosis in home or unfavorable climates.

#### DICHOTOMY.

Lady—I guess you're getting' a good thing out o' tending the rich Smith boy, ain't ye doctor?

Doctor—Well, yes; I get a pretty good fee. Why?

Lady—Well, I hope you won't forget that my Willie threw the brick that hit 'im—Scribners.

## Original Articles

### THE ABERRANT RENAL VESSEL.

WILLIAM M. SPITZER, M. D., Denver.

That these vessels exist is a fact. That they deserve the blame that has been cast on them is a fiction. While it may in the future be proven that the removal of such a vessel may aid in the return of a hydropnephrotic kidney to normal, it will at the same time be demonstrated that the mere ligation of it, without its removal, will accomplish the same thing; that is to say, if it be a factor in the production of hydro-nephrosis, it is because the kidney has too much blood supply compared to its blood-outflow (supposing the vessel to be an artery), and not because the vessel mechanically causes interference with the outflow of urine.

There is either an aberrant renal artery or an aberrant renal vein in about 20 per cent of all human beings; these vessels occur more frequently on the left than on the right side. Occasionally there are several renal arteries. An aberrant renal vein is a rarity.

The renal artery *never* enters the kidney as a renal artery, but splits, as a rule, into four or five arteries, or perhaps more, the larger number of which, following the anterior wall, and the smaller number following the posterior wall of the pelvis, furnish the blood supply to the anterior and the posterior portions of the kidney, respectively. Between the branches of the anterior and posterior sets of arteries, there is very little anastomosis; this fact has been known for a long time, and advantage taken of it surgically. (The bloodless plane.)

Whether there be an aberrant vessel or not, all vessels as a general rule enter or leave the hilum of the kidney; in a very small percentage of the cases in which

there is an aberrant renal artery, it does not enter at the hilum, going in at the lower part of the spinal border of the kidney. This, when it occurs, is presumed to prevent the outflow of urine from the renal pelvis, by pressure on the ureter, when the kidney has fallen from Gerota's pouch.

To be sure, this additional artery has existed just as long as any other artery in the body, but is not supposed to have caused any trouble until, the kidney having sunk considerably, the ureter has become angulated or kinked over the artery, thus preventing the urine from leaving the pelvis; or, according to the impression given by those who profess to believe this explanation for the occurrence of hydronephrosis, it offers just enough obstruction to the outflow of urine to permit the passage of all but a small amount; said small amount remaining in the pelvis and gradually distending that muscular bladder until after many years the kidney is practically destroyed, and nothing but a bag of water remains. Thus, the picture of a chronic advancing hydronephrosis is presented to us.

Were this condition of affairs true, that is, were it true that this is the cause of this hydronephrosis, it may easily be seen that the kidney would be destroyed very promptly.

This extra vessel is blamed in the same way, for the appearance of an intermittent hydronephrosis. In this condition, the picture is different; there is a period during which very little or no urine is able to leave the pelvis, and while the kidney continues secreting, the pelvis becomes rapidly distended, and a condition known as renal colic appears, lasts a variable length of time, and disappears, leaving the patient without any symptoms until the next attack, which may be in a week or a year. How can the crooking of the ureter over this vessel be blamed for these conditions, when we consider that once the kidney leaves Gerota's pouch it can never return

there, unless it be forcibly placed and held there? As long as it is out of this pouch, and sunken out of position, if it were true that the ureter were ever crooked over a rigid artery, with sufficient pressure to prevent the outflow of urine, there should be no intermission. On the contrary, the fuller the pelvis, the greater the weight of the kidney, and the more this organ should sink; the kink in the ureter should therefore become intensified, and the hydronephrosis increase, and so on, *ad infinitum*. This, of course, does not occur.

But, the great fallacy is, that even though a kidney with an aberrant vessel running to either the anterior border or the posterior border of the lower pole, sinks from its position, the relation of its ureter to its vessels either remains the same as when it reposed in Gerota's space, or the ureter and vessels change their relation so that now it would be impossible for a vessel to interfere with the ureter. This is explained by the three accompanying diagrams.

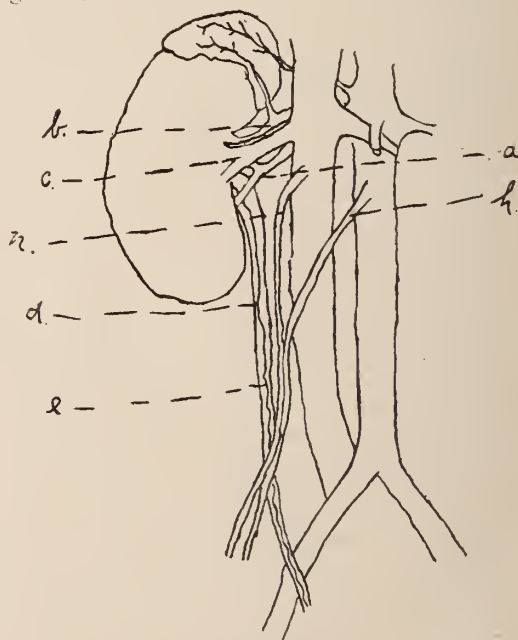


DIAGRAM I.

- |                          |                      |
|--------------------------|----------------------|
| a Aberrant renal artery. | e Ureteric branch of |
| b True renal artery.     | spermatic artery.    |
| c Renal vein.            | h Spermatic artery.  |
| d Ureter.                | n Spermatic vein.    |



Diagram I. shows, schematically, the condition that obtains in these kidneys with an anomalous vessel, when they are where they belong. The aberrant artery is represented as running to the anterior surface of the kidney; were the artery to be represented as running to the posterior surface of the kidney, it should not interfere with the ureter any more.

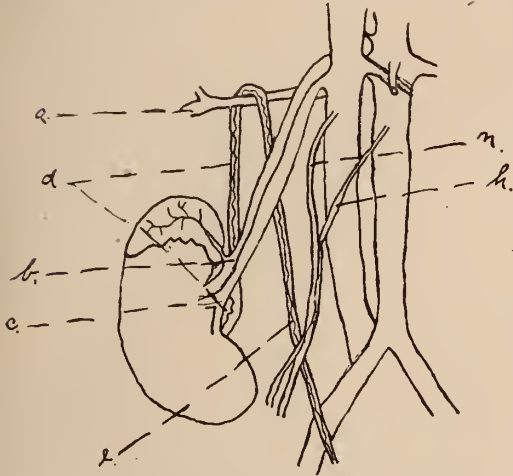


DIAGRAM II.

It will be observed that whether this aberrant artery ran to the anterior or posterior surface of the lower pole, the kidney must, at some time, have hurdled it, for the ureter to be thus crooked over it; otherwise the ureter would be either entirely behind or in front of it.

- |                          |                      |
|--------------------------|----------------------|
| a Aberrant renal artery. | e Ureteric branch of |
| b True renal artery.     | spermatic artery.    |
| c Renal vein.            | h Spermatic artery.  |
| d Ureter.                | n Spermatic vein.    |

Diagram II. shows the erroneous conception of what occurs after the kidney has fallen from its position. For the ureter to be obstructed by such a vessel, the vessel would have to be broken off from the fallen kidney, and stick out rigidly into space, as shown in the diagram. To make it more ridiculous, the true renal vessels obey the law, stretching as arteries and veins always do when tension is put upon them. (Blood vessels are the most elastic and most extensible structures in the body).

Diagram III. shows what really occurs when the kidney sinks, and the aberrant vessel is present; all arteries and veins to and from the kidney stretch as much as is required of them and do not come in con-

tact with the ureter at the uretero-pelvic junction, as has been assumed. To be sure this aberrant vessel crosses the ureter, as does the true renal artery, at the same spot; usually very close to the spot at which the spermatic artery crosses it normally, but cannot exert any more pressure on it than the true renal artery always does under similar conditions and not as much as the spermatic. It must be remembered that the spermatic crosses the ureter always, and being tense, presses it against the psoas magnus muscle; furthermore, the ureter cannot get away from the spermatic because the spermatic gives off a branch to it at this spot. The ureter is shown in this picture as it is copied from a radiogram of an opaque catheter in situ in a case of nephrotosis, without hydronephrosis. When the kidney has fallen, as in this case, the ureter has this curve because it is normally so long and so tractile that its loose attachment to the transversalis fascia and the fatty capsule at this high point is not torn loose.

In conclusion, I wish to state that there

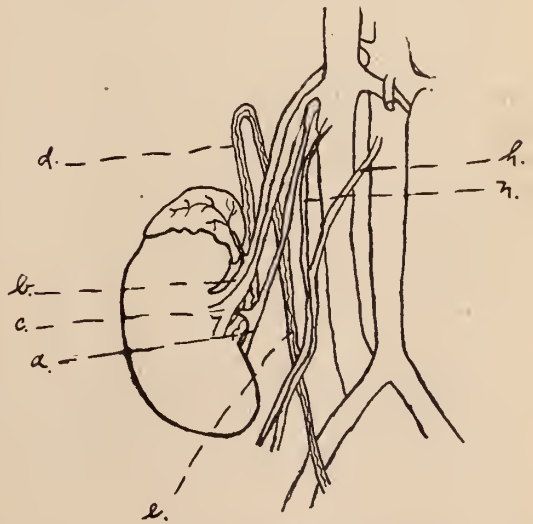


DIAGRAM III.

Ureter copied from radiographic plate with opaque catheter in situ, in a case of nephroptosis without hydronephrosis.

- |                          |                      |
|--------------------------|----------------------|
| a Aberrant renal artery. | e Ureteric branch of |
| b True renal artery.     | spermatic artery.    |
| c Renal vein.            | h Spermatic artery.  |
| d Ureter.                | n Spermatic vein.    |

are many factors in the formation of a simple hydronephrosis,\* and some of the important ones have not as yet been worked out. Within two or three years there will be some new and worthy ideas put forth to explain the condition, not the least among which will be the demonstration of how a changed blood supply to the kidney acts as an important factor, and changed intra-abdominal pressure as another. Ideas or theories, per se, no matter how rational they seem, are of no value, but must be supported by work done on the lower animals before conclusions may safely be drawn. We have had our lesson from work done on retroflexion and prolapse of the uterus, for which I understand there are more than sixty different operations. Let us, therefore, benefit by these experiences, in kidney work, and arrive at safe conclusions before inventing new operations. The operations will come by themselves, when we are ready for them. There are already at least a dozen different nephropexies, each of which is, according to its author, the only correct one.

Lastly, it behooves us to remember that nephroptosis exists in probably 50 per cent of all women past the age of twenty-five, whereas, hydronephrosis is comparatively rare. Presuming that these people, and a large number of men besides that have nephroptosis, have their share of aberrant arteries, why is hydronephrosis in an advanced stage not extremely common?

630 Metropolitan Bldg.

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\*By simple hydronephrosis is here meant that condition in which hydronephrosis occurs without the presence of stone, tuberculosis, or stricture of the ureter, or some condition in the lower urinary tract as a known causative factor.

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A doctor was attending a dangerous case where a Scotch butler was engaged. On calling in the forenoon he said to Donald: "I hope your master's temperature is much lower today than it was last night."

"I'm no sae very sure about that," replied the butler, "he died this morning."

## PURPURA FULMINANS

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### Case Report

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J. W. AMESSE, M. D., Denver

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A few of the so-called rare diseases of mankind are actually infrequent; others may be regarded as only relatively uncommon, while a still larger proportion of affections, which a few years ago were classed as unusual, are now familiar subjects of study in every extensive clinic.

With the refinements in differential diagnosis constantly reinforcing our equipment, it is not assuming too much to predict that many others of this group will be eventually identified with the every day diseases.

To illustrate. We are told by McRae in Osler's Modern Medicine, published only a few years ago, that typhus fever "has never had a permanent habitation in this country," that no outbreak has occurred in the United States for over ten years and that "sporadic cases may crop out occasionally at a great distance from any known focus of the disease."

As a matter of fact, the investigations of Anderson and Goldberger have conclusively shown that typhus is endemic in the United States and Mexico, that it has existed for many years under the name of Brill's disease, and that few large centers of population are ever entirely free of this infection. Anderson makes an estimate of one case of typhus to forty-seven of typhoid, in the country as a whole.

The same holds true of pellagra, a disease not known to even exist in this country less than ten years ago, and scarcely remarked in our standard text books. Since 1905 it has been reported from practically every section of the country. Thousands of cases are annually studied in the South, where the mortality is at least twenty-five per cent. There is ample evidence to show

that pellagra has been endemic in the United States for many years, suddenly and for obscure reasons, increasing in virulence quite recently, until it assumes, as Lavinder remarks in a recent paper, "the dignity of a national problem, demanding the most serious attention."

It is equally certain that mycotic and metazoan infections have multiplied their incidence in the United States since our invasion of the tropics. Returning soldiers, travelers and tourists have scattered the essential diseases of these distant colonies throughout the country, until it has become possible to give clinical instruction in tropical medicine in practically all of our larger institutions.

Obscure diseases of the ductless glands are recognized more readily and difficult problems in hematology are solved more promptly than ever before.

Among the unclassified affections of the blood, no syndrome is of more interest than that associated with the various forms of purpura. Whether purpura is a distinct pathological entity or not, whether the provisional grouping now followed will clear the way to a better understanding of the etiological factors concerned, or still further confuse our interpretation of them, the amazing phenomena noted in the major cases will always be a source of deep concern for the clinician.

For the present we may consider two varieties of this disorder, purpura simplex, where the eruption is confined to the skin, and purpura hemorrhagica, in which the distinguishing element is hemorrhage from the mucous membrane. Oddly enough, this arrangement forces us to classify among the simple purpuras the most fatal form of all, purpura fulminans. As Joseph H. Pratt fittingly observes, in commenting on our nomenclature, "there is a certain irony in applying the term simple purpura to a disease that is one of the most surely and

rapidly fatal of which we have knowledge."

This type of hemorrhage was first described by Henoch in 1887, although the purpuras in general were ably considered by Werlhof in 1775. Following Henoch, Hervé published an exhaustive monograph on the malignant form, which he named purpura foudroyant. From that time up to 1906, only thirteen cases appear in the literature, yet Elliott in 1909, was able to abstract reports of fifty-six. We are not to infer from this that purpura fulminans is increasing, but merely that the profession is advancing in the sphere of diagnosis.

The condition is unquestionably a toxemia, and practically always is secondary to an infection, such as scarlet fever or streptococemia. No organism has as yet been isolated but the toxins must be similar to the endotheliolysins produced by *Bac. Pstis*, *Bac. Hemorrhagica* of Kolb, and others concerned in the various forms of hemorrhagic septicemia.

It is important to remember, however, in determining the character of subcutaneous ecchymoses, that poisonous doses of certain inorganic substances, such as the salts of lead or mercury, or of organic compounds—copaiba, belladonna, etc., may produce lesions identical with purpura.

Practically all cases of purpura fulminans occur in children, Stybr reporting an instance in an infant of two months. At least half of the cases follow scarlet fever, the severity of the attack bearing no relation to the hemorrhagic complication. The eruption commonly appears in the second or third week of convalescence and is usually fatal within forty-eight hours. Cases have been reported where the entire course was concluded in five hours. Sex, social condition, environment and season are without bearing on the incidence or course of the infection. The extent and the distribution of the hemorrhages vary. In



most instances the effusions are first noted on the limbs, and may progress so rapidly that in a few hours the member may be entirely discolored, either blue or black, with frequently a reddish tinge in reflected light. The mind is clear throughout. There is little or no rise in temperature. Autopsy shows no gross lesions other than the superficial hemorrhages and the striking anemia of the internal organs.

Purpura fulminans may be confused, not only with the toxic conditions above noted, but with such diseases as erythema exudativum multiforme and the hemorrhagic form of variola.

In purpuric small pox, however, there is always a tendency to hemorrhage from the mucous membrane, there are severe constitutional symptoms, such as agonizing pain in the bones and joints, with fever, rapid pulse, scanty urine and intense prostration. Edema, especially of the face, is often pronounced. Again, black small pox is commonly found in young men, unvaccinated, and giving a more or less definite history of exposure. The onset is sudden with chills, vomiting and headache. Although here, also, all cases are fatal, death is unusual before the fourth day.

Thus far, treatment has been entirely ineffectual in arresting the fulminating type of purpura at any stage. With the brilliant results achieved in other hemorrhagic conditions, through the use of human or animal blood serum, this agent should be given an exhaustive trial in every case.

#### CASE HISTORY

February 28, 1911, I was requested by Dr. J. W. McNamara to consult with him in the case of H. S., a boy eight years of age. On reaching the patient I found Dr. J. N. Hall and Dr. F. R. Coffman also in attendance.

The child was the elder of two sons, living with their parents in one of the larger hotels of Denver.

The family and the personal histories

were entirely negative. Patient had never been seriously ill before.

Two weeks prior to the above date, or about February 14, he suffered a transient febrile disturbance, with a general eruption lasting but one day. No medical attention seemed called for. Seven days later chicken pox developed, running the usual benign course. February 13, the patient, now feeling perfectly well, called his mother's attention to "blue spots" on his right thigh. Within an hour, great weakness compelled the child to return to bed. A decided pallor was remarked and vomiting occurred. The subcutaneous hemorrhages increased so rapidly that in a short time practically the entire right thigh was involved. The eruption then appeared on the left leg and thigh. Temperature was elevated a trifle, but the condition was painless throughout. On examination, the intense pallor, anxious expression and sighing respiration were especially noticeable. Over the body there was a fading eruption of chicken pox, with numerous hemorrhages into the vesicles and beneath the crusts. The face showed no eruption whatever. In addition to the discrete hemorrhages, there were numerous large sugillations over the posterior and lateral aspects of the trunk. The right thigh and the greater portion of the left were plum colored. Below the knees there were areas of the same hue, from five to ten centimeters in diameter, constantly enlarging. A fine desquamation could be easily made out on the neck, chest, hands and feet, evidences of the scarlatinal attack of a fortnight previous. The mucous membranes were pale and dry. Temperature 100.5, pulse 160, the patient's mind clear and alert.

In view of the fact that the boy had never been vaccinated and also, that he attended a school from which over twenty cases of small pox had been taken during the winter, the matter of differential di-

agnosis was rather strongly borne in on the consultants. There were a great many unvaccinated persons in the hotel, including the boy's parents and little brother. After a very exhaustive study, it was decided that we were dealing with a fatal case of purpura, but as a precautionary measure, Dr. Coffman, at that time Assistant Health Commissioner, was requested to vaccinate all unprotected persons in the house and fumigate the apartment. Streptolytic serum, stimulants and styptic agents proved of no avail, the patient succumbing on the second day of the disease.

This was unquestionably a case of purpura fulminans, developing after a mild attack of scarlet fever and doubtless due to the same organism, exalted suddenly in virulence through unknown causes.

I am indebted to Dr. McNamara for permission to publish this history.

### *THE CLOSE RELATION OF THE DENTIST TO THE PHYSICIAN\**

By W. O. WEBER, D. D. S.  
GREELEY, COLORADO.

More intimate co-operation between the dentist and physician would be beneficial to the patient and to the profession. Dentistry is a specialty of medicine; the stomatologist, with a broad knowledge of medicine and a particular training in his own field, is exactly on a par with the oculist, the laryngologist or the obstetrician. Thorough knowledge of the principles of medicine must underlie all successful treatment of disease and the patient must be regarded as an individual, not a collection of separate organs, each to be treated alone. Since one region of the body cannot be isolated from the entire organism or separated in its development, nutrition,

function or diseases, neither can its treatment be a separate matter. The person attempting to treat one part of the system must understand the whole, at least broadly, in order to apply general pathology and therapeutics to his particular part. With this intelligent survey of the whole field, the dentist can be a most efficient factor in the prevention of disease and in its successful treatment. A fuller appreciation of their mutual interests would bring the family physician and dentist more often together in their work. Many cases of general asthenia, malnutrition and anemia under medical treatment are primarily due to oral causes; and not all the tonics in the pharmacopeia will suffice to cure the patient who cannot chew his food or who is constantly swallowing bacteria and their products from conditions of oral sepsis, such as dental caries and pyorrhea.

In daily practice these unfortunate patients are a trial to their physician, who seldom accomplishes much toward permanently relieving their state of health until he examines the source and not the sequel of the symptoms and insists on proper treatment of the mouth and teeth. The careless doctor, who hastily writes a prescription for pepsin for dyspepsia, castor oil for constipation or iron for the evident anemia in such a case, will be disappointed in the results of his treatment unless he goes much further and seeks and removes the causes of the trouble.

Consultation with an able dentist will often save the patient great expense and much depreciation in health and prove the real way to recovery; whereas months of medical treatment alone would bring only trifling and temporary improvement of symptoms, to the disgust alike of the patient and physician, who often part company at this stage with a feeling of mutual relief.

The busy physician dismisses the matter from his mind with the thought that

\* Read at the annual meeting of the Colorado State Medical Society, September 25, 26, 7, 1912.

"there's no satisfaction in treating these chronic cases that are all run down." While the patient either plods along on a lower level of efficiency than he should be occupying or suffers still further from the natural development of his morbid state. After a time secondary conditions arise, chronic nervous and mental disturbances may appear, neuralgia, insomnia and the nervous fatigue neuroses, leading, in neglected cases even to a complete physical and mental breakdown.

A fair view of these cases shows that the terminal symptom complex was rendered possible by the low vitality of the patients; that is, by anemia and malnutrition, due to a chronic indigestion, caused by imperfect mastication, due to faulty teeth.

Still more is this true in the case of children, in whom neglect of proper dental treatment leads often to defects of growth that become irremediable. Living proofs of this are to be seen on every hand, but even yet are not receiving the attention they merit.

Take for example the numerous cases of nasal obstruction with adenoids, enlarged tonsils and often recurring catarrhal inflammation with or without extension to the frontal and maxillary sinuses or the eustachian canal and middle ear or mastoid cells. How many physicians or general surgeons realize the advantage of co-operation with the dentist in the treatment of these children? It is not enough to tell the parents to have the child's teeth attended to and his tonsils and adenoids removed. In too many instances this does not end the trouble. The narrow arch and nostrils and high palatal vault with deflected septum will maintain the habit of mouth breathing; the pharynx and mouth will be dry and irritated, the larynx, trachea and bronchial tubes will be injured by the rapid inhalation of unwarmed, unfiltered air and danger to the lungs may ensue. As the child attempts

to overcome his mouth-breathing habit, he is obliged to breathe more slowly and less deeply than normally through his nose, and suffers from the diminished supply of oxygen. His impeded respiration requires an increased action of the voluntary respiratory muscles and leads to the faulty growth of the chest wall, resulting in protruding sternum and scapula, high shoulders and spinal distortion, while his whole respiratory condition impairs his vitality and favors the onset of disease, and this is not all. The child of this type has a narrow arch too small to accommodate his permanent teeth. As these are erupted the crowded teeth may give rise to much prolonged pain and nervous disturbance which the undervitalized child is ill able to bear. With his irregular teeth he cannot masticate his food properly, and again, his nutrition suffers. Deprived of abundant oxygen and digestible food supply, he becomes the easy prey of diseases and adolescence. The remedy is plain, namely, proper combined dental and surgical and medical treatment early in the case and continued long enough to correct the deformity.

In connection with this thought I want to call your attention to the fact that the physician in my mind can do more for children suffering for lack of dental care than he may realize. For the reason that the physician is the first one to be called on to care for the child's health and in so doing, if he would impress upon the minds of parents the necessity and importance of a clean and healthy mouth, there would be less suffering among children for lack of dental care. Oftentimes the advice of the physician is heeded by parents more than that of the dentist, because he is consulted regarding the general health. For example, not long ago a lady brought her child, a boy 10 years of age, to my office. I found his teeth in very bad condition, and after I explained to her the necessity of



caring for the teeth she replied that she would consult her physician before having the work done.

The surgeon and the dentist may well work together in the treatment of fractures of the jaws, in which the dentist can make a splint for retaining the fragments in position until bony union occurs, much more satisfactory than the one the surgeon is likely to buy or devise for himself.

In various suppurations about the head and neck the surgeon is often at a disadvantage without consultation with his dental conferee. Antral disease of nasal or dental origin, parotid or submaxillary abscesses, swollen or suppurating cervical lymph glands, periostitis or necrosis of the maxillary may be due, more or less directly, to faulty dental conditions, a fact which the surgeon is apt to overlook, but which is readily apparent to the dentist.

The more obscure cases of neuralgia (so-called) will sometimes require the united efforts of dentist and physician to illuminate their etiology to direct their successful treatment.

Another line in which the physician and dentist can help each other is in giving of anaesthetics. Few general surgeons are fully acquainted with the many advantages of nitrous oxide and not only omit to use it when operating themselves, but advise patients not to take it, even for dental operations. Such advice must result from a meager knowledge of its effects and cannot be other than detrimental to the patient's interests in many operations in which anaesthesia is required for but a short time. For prolonged operative work the combined use of nitrous oxide and oxygen gives a satisfactory anaesthesia in most patients, especially in those with chronic bronchitis, valvular heart disease or some other contra indications for either chloroform or ether. The ease and rapidity with which the patient is put to sleep, the safety with which that sleep may be

prolonged by giving oxygen with the nitrous oxide and the quick awakening to consciousness, usually without nausea, render this method of anaesthesia an ideal one for many dental and surgical operations.

Although there are certain drawbacks to its use, it is more expensive than chloroform or ether, less readily obtained away from large cities, less easily kept on hand for emergencies and less easily carried and handled outside of the office or hospital, on account of his better training and wider experience with this anaesthetic the dentist may properly be called on to administer it for surgical operations.

In conclusion, the interest of the patient would be furthered by consultation between the physician and the dentist, not only in occasional operations and in special cases of injury and deformity, but in many conditions of acute and chronic disease. An intelligent acquaintance with each other's work and a friendly understanding of mutual respect between the members of the profession is greatly to be desired.

It seems to me that the family physician would be justified in insisting on his patients visiting the dentist regularly, as there are still a great many people who think that dental work is a luxury instead of a necessity.

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### AMNESIA.

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BY EDWARD DELEHANTY, M. D.  
DENVER, COLO.

Amnesia is a general term and literally means forgetfulness or loss of memory. Medically the term is not applied to ordinary forgetfulness, for that is a condition of health in life. Many of us are often embarrassed by forgetfulness, particularly proper names and places, and sometimes imagine that it is due to mental change when in fact it is due to a faulty training of the faculty of memory. The proper ap-

plication of the term amnesia, even in lapses of memory sufficient to incapacitate the individual for the ordinary pursuits of life, is as yet vague and uncertain.

The loss of memory incident to senile change, in which the events of some years back are fairly well retained, while those of later years are lost, is classified in many of the textbooks as amnesia. So with the loss of memory in organic diseases of the brain as seen in tumors, gunshot or other wounds of the head, and in the various degenerative changes affecting cerebral nutrition, such as dementia, paresis and the like. Some even classify unconsciousness as amnesia, but the two are not identical—in the former there is a complete cessation of all psychical activity and includes amnesia while the latter does not necessarily include the former.

If the loss of memory associated with other mental defects, particularly the power of attention and incoherence of thought, as seen in the above affections, be regarded as amnesia, then indeed amnesia is a very common condition. Such, I believe, is not the general acceptance of the term. It is with those cases of periodic loss of memory, with changes in personality, that is of interest to psychiatry, and to which the term is particularly applicable. It concerns itself with those who, besides their regular and normal life, have another psychological existence, during which they may act like an ordinary individual or perform acts which show a deranged mind, and when they return to their normal condition have no memory of what happened in any other state. The causes which lead to such conditions are numerous. Epilepsy, hysteria, traumatism and the various forms of poison, particularly alcohol, are the usual etiological factors.

The following cases briefly may be cited as examples: A man thirty years old, of exemplary habits and with a good family history, seven years ago was thrown from

a street car. He was rendered unconscious for three days and semi-conscious for four days more, after which he apparently regained his normal mental health. He suffered a fracture of the skull, which for some unaccountable reason was not elevated at the time of the injury. For two years he suffered no inconvenience except occasional vertiginous attacks. He then developed epilepsy, the attacks averaging one in two weeks. Sometimes he had several seizures the same day, but nothing unusual was noticed except that he would be drowsy for twenty-four hours or more. One year ago, after having eight seizures in one day, he disappeared, and when heard from was in Kansas City, having telegraphed from that city for money to return. When examined after his return, he showed loss of memory of everything that happened from the time of the attack until he woke up, as he expressed it, in Kansas City. The loss of memory extended over a period of three days.

The fact that he was not apprehended as an insane person indicates that his acts must have been fairly normal. Even now he has no knowledge of how he reached Kansas City. It is frequent for him to go about in an automatic condition for several hours after an attack. Having examined him in this condition, I found that although he conversed and acted as if conscious and master of himself, he exhibited a loss of perception of things about him and there was apparently a confusion of ideas and an incoherence of his language.

The case of Stobbie, who was in the insane ward of the County Hospital for so long a time, presented another phase of amnesia, due to epilepsy. He is forty-six years old and always of good health until he received a severe electrical shock, from which he dated his attacks of epilepsy. After a seizure of epilepsy, he became violently maniacal, destroying everything within his reach, whether animate or inani-

mate. Sometimes there was no preceding seizure.

The character of his mania was as furious as any ever seen in the institution and usually lasted several days, during which he was the terror and danger of the attendants. When the attack subsided, there was always a loss of memory of everything that happened. Occasionally he would have a glimmering of consciousness, resulting in the memory of certain things here and there, particularly some of the most terrifying ideas that possessed him, such as threatening voices, stifling odors, flames of fire before his eyes, and the like. At times the attack was ushered in by the hallucination that the smokestack of the hospital was falling on him and he would run in terror to his ward for protection.

At first he exhibited great anxiety and concern regarding his condition, fearing that he would destroy property or injure his friends, and when paroled would voluntarily return to the institution. As time wore on, however, anxiety about himself and others faded away, and he became irritable and weak-minded, and showed the effect of the violent storms through which he had passed and when last heard from was in the state institution, a hopeless dement.

The case of Fred Gorham, about whom so much was written in the lay press, presents a case of amnesia which extends into the past. He was a young man of exemplary habits, in whose family there were no mental or nervous diseases, except the fact that both himself and mother stuttered. He had been visiting in the East and started to return home; the last he remembered was his arrival in Omaha, in which city he was detained for two days on account of an attack of tonsilitis. He came to Denver, which was out of his way, and was found wandering in the streets. On examination at the County Hospital it was found that his amnesia extended backwards, and although he has a wife and two

children, he remembered nothing about them. As he was taken away before a sufficient time was given for a careful and extended examination there is grave doubt of the genuineness of this attack.

A similar case is reported of a young woman who, during her confinement sustained a severe psychical shock, resulting in complete amnesia of events subsequent to her marriage, including the ceremony. She looked upon her husband and child without being able to realize how she got the one and gave birth to the other. The amnesia in her case was complete and permanent, while in the other transitory.

These pathological states of consciousness are not only interesting in a psychological point of view, but are of particular consequence from a medico-legal standpoint. It is obvious that the question of the responsibility of an act, either civil or criminal, of an individual in such a state of consciousness will arise. The legal test of responsibility consists in knowledge of the nature and consequence of an act at the time it was committed, but neither law nor medicine can apply that test to amnesia. It is usually not a question of responsibility, but of genuineness.

Amnesia is often simulated by criminals because it is easily feigned and difficult to expose. Attaches of the district attorney's office tell me that even where there is no formal defense of amnesia, very frequently the criminal feigns, by conveniently forgetting all events connected with the crime. Often the defense is insanity, based on amnesia, and clever attorneys make the most of it to secure the verdict of "not guilty" on the grounds of irresponsibility.

As an example, I quote the case of John Ryan, who shot and killed William Kerr. The defense was insanity, alcohol amnesia being the particular cause of the irresponsibility. The case was stubbornly fought, twice in the District Court, and finally went to the Supreme Court. Ryan was a



heavily drinking man and after a quarrel with another man, who beat him up considerably, went to his room, secured two guns and shot at his assailant, but the bullet hit an innocent bystander, William Kerr, from the effects of which he died. Ryan claimed loss of memory of all events from the time prior to his quarrel to sometime after being lodged in the city jail. He did remember being struck upon his head with something heavy, also a hazy recollection of the officer's command to drop his guns. He remembered the guns lying on the ground, but had no knowledge of how they got there. He remembered some of the conversation in the patrol wagon, also heard some one say that the man whom he shot died thirty minutes before. He remembered nothing about securing the gun, the shooting or anything directly connected with the assassination. There were many minor incidents in this case to suggest feigning, but the fact that there was a complete loss of memory of events which should produce the most lasting impression upon his mind, such as the securing of the guns, the report of the revolver and the actual assassination, while little things such as the obeying the officer's command, his regret for getting the wrong man, and incidents intended to aid the defense, in my opinion, places the case out of the pale of true amnesia. He was convicted of murder in the second degree and is now serving a fourteen-year sentence in the state penitentiary.

The same defense was used in the Frickie case, and the two are analogous. In a semi-intoxicated condition, Frickie shot and killed a bartender, with whom he had a quarrel, principally because he was refused liquor. After the quarrel, Frickie walked several blocks to his room, returned with a revolver and, without any warning shot and killed the bartender. When examined in the county jail the next day, he claimed a loss of memory of all events of the previous afternoon and evening. Like

Ryan, he remembered things which would aid the defense but forgot major events. He definitely remembered the bartender striking him on the head and arm, but eye-witnesses testified that no such assault occurred, and the fact that there was no physical evidence of such an assault proved that it was plainly manufactured by the defense as an excuse for the crime. He was convicted of murder in the first degree and is now serving a life imprisonment.

There is no question but that alcohol may be a cause of true amnesia, but drunkenness, either with or without amnesia, is no excuse for crime and has no standing either in society or law. If (however, the constant use of alcohol has produced organic changes in the brain, manifested by delusions of suspicion or persecution, and there is amnesia feigned or genuine, the defendant deserves and should receive the protection of the medical expert.

The amnesia of Mrs. Reed, who was tried for assault with attempt to rob Mrs. Phipps in 1908, was feigned with exceptional cleverness. She assumed a loss of memory extending over a period of six weeks and with the exception of a few minor events, the amnesia was complete. She had no recollection of such events as accosting Mrs. Phipps in the city park, of threats to kill all, including Mrs. Phipps' child, or of actually throwing dynamite when the object of the assault was defeated. Yet she did remember of a lady being kind to her while in the train, and of being in a large room which she supposed was the depot at Chicago. She had total amnesia of what happened in Chicago, where it was claimed her acts were more clever, if not as adventuresome as those in Denver. Insanity resulting from the excessive use of opium was the defense in this case. Amnesia played no part in the trial. This would at least lend color to the belief that those who de-

fended her were not satisfied with its genuineness.

Recently assumed amnesia was used in Denver for advertising purposes. The Lady in Black, who was sufficiently clever to forget her personality and to secure the services of newspaper reporters in finding it, thereby extensively advertising the play "Nobody's Widow," proved to be a fraud.

Cases of true amnesia with alterations of personality are rare and before such a diagnosis is made the greatest care should be taken in the examination. It is of practical importance to know that nearly all the cases cited by Binet and Ribot in their works and by Azam in his article in Tukes' Psychological Dictionary, show either an hereditary or acquired psychopathic taint.

## Book Reviews

### PRINCIPLES AND PRACTICE OF OBSTETRICS.

**Principles and Practice of Obstetrics.** By Joseph B. De Lee, A.M., M.D., Professor of Obstetrics at the Northwestern University Medical School. Large octavo of 1060 pages, with 913 illustrations, 150 of them in colors. Philadelphia and London: W. B. Saunders Company, 1913. Cloth, \$8 net; half morocco, \$9.50.

Dr. Lee divides this work into four parts as follows: The Physiology of Pregnancy, Labor and the Puerperium; The Conduct of Pregnancy, Labor and the Puerperium; The Pathology of Pregnancy, Labor and the Puerperium; and Operative Obstetrics.

More than half of the work is devoted to the Pathology of Pregnancy, Labor and Puerperium.

The author considers that childbirth today is not a normal function, but a pathologic condition, basing his views on the facts that the mortality and morbidity of childbirth are both abnormally high.

The conduct of labor in properly equipped maternity hospitals is urged, and also the advisability of having sufficient assistants.

"Every labor case should have two physicians."

Theoretically true, but practically impossible until women are educated up to the point where they will give pregnancy, labor and the puerperium proper consideration.

Episiotomy, which heretofore has been severely neglected or dismissed as an unnecessary and unscientific procedure in most text-

books on Obstetrics is given proper consideration by Dr. De Lee.

The three chapters on Puerperal Infection are wonderfully good. Conservative treatment of this condition is urged.

The illustrations are unusually instructive. The work as a whole is a most valuable addition to Obstetric literature.

CUTHBERT POWELL.

### PSYCHANALYSIS.

**Psychanalysis: Its Theories and Practical Application.** By A. A. Brill, Ph. B., M. D. Chief of the Neurological Department of the Bronx Hospital and Dispensary; Clinical Assistant in Psychiatry and Neurology at Columbia University Medical School. Octavo of 337 pages. Philadelphia and London: W. B. Saunders Company, 1912. Cloth, \$3.00 net.

W. B. SAUNDERS COMPANY

Philadelphia

London

"Psychanalysis is the most rational and effective method of psychic therapy . . . . It is the only system of psychotherapy that deals with the neuroses as entities instead of treating symptoms, as do hypnotism, suggestion and persuasion." It is only through hard work, Dr. Brill says, and long experience that one can acquire a thorough knowledge of Freud's psychology and it is necessary to master at least Freud's theories of the neuroses, the interpretation of dreams, the sexual theories, the psychopathology of every day life, and his book on wit, and last, but not least, one must have had training in nervous and mental work.

The twelve chapters of the book treat of these various phases of Freud's psychology and give a very good statement of Freud's own views.

Chapter 1. The Psychoneuroses. Hysterical symptoms, like neuralgias, paralyses, epileptiform attacks, etc., can be traced to psychic traumata, which the patient cannot recall but which can be demonstrated by psychoanalysis. The symptoms are symbols for certain traumatic events. The pathogenic idea which the patient wishes to forget is repressed by the "psychic censor" but continues to strive to come to the surface. This struggle leads to its being transformed by the process of conversion into a hysterical symptoms. This mechanism or some modification of it, accounts for the origin of phobias, obsessions and doubts, as found in the compulsion neuroses. Freud calls the latter, as well as hysteria, "defense neuropsychosis," because they serve to protect the patient from memories which otherwise would be intolerable.

In tracing, by psychoanalysis, the psychic traumas which are supposed to be at the basis of the symptoms of the defence neuropsychosis, one invariably arrives at sexual experiences of childhood. Freud goes so far as to say that: "in a normal vita sexualis no neurosis is possible." It is only fair to state here that Freud's conception of the sexual is very broad and does not limit itself to gross sexual acts.

Chapter 2. Dreams. Dreams are produced



by the working of two psychic forces, one of which represents the wish which is always contained in the dream, while the other exerts a censorship over this wish, and thus produces the distortion. The wish has its origin in the deep subconscious needs of the organism, which very often are not approved of by the training and ethical principles of the patient, the censor. Dreams have a manifest and a latent content. The former is the absurd jumble of pictures which is remembered on awakening. The latter is the fundamental thought of the dream as it existed before it was distorted by repression, and which can be reproduced by psychoanalysis. Dreams as the product of the unconscious afford the easiest access to the exploration of the neuroses.

Chapter 3. Contains an analysis of the actual neuroses as neurasthenia and anxiety neuroses; their symptoms, mechanism, etiology and relation to the psychoneuroses. Neurasthenia originates whenever normal coitus is replaced by masturbation or spontaneous pollution. In anxiety neuroses the etiologically effective factors are based on a series of injuries and influences from the sexual life.

Chapter 4 treats of the compulsion neuroses. In these cases we find obsessions, phobias and doubts. The patients suffering from them are commonly called, psychasthenics. Freud's description of the mechanism of compulsion neuroses as quoted by Dr. Brill, begins as follows: "Sexual experiences of early childhood play the same part in the etiology of the compulsion neuroses as in hysteria, but whereas the latter is characterized by a passivity the former is noted for its aggression or sexual activity."

Chapter 5 is headed, Psychoanalysis and the Psychoses, and gives an exposition of the association experiment, of the complex theory, and of the mechanism of the delusions and hallucinations. The word complex denotes a group of ideas or memories which has a marked emotional value and which is split off from consciousness and repressed into the unconscious because it is unacceptable to the psychic censor. In the production of these symptoms sexual experiences again play the most important role.

The 6th chapter undertakes an analysis of the psychological mechanism of paranoia and demonstrates its relation to homosexual wish fantasies.

"The psychology of everyday life" (Chapter 7) deals with those incorrect psychic activities which the individual daily performs unconsciously. The forgetting of names, forgetting a resolution, mistakes in speaking, reading and writing, symbolic actions, can be best understood by Freud's psychology. We deal here again with complex formation, the repression of it into the unconscious and its return into consciousness through association.

An example, taken from Brill, will best illustrate this mechanism. "A young man, talking about an old woman who was foolishly in love with him, said 'I am thinking seriously of burying her' instead of marrying. Here the lapsus linguae betrays his inner feelings in the matter. He would marry this old and wealthy

woman if he should know that she would soon die and leave him her money."

Chapter 8 deals with hysterical fancies and dreamy states which also represent wish fulfillments, having reference to the sexual life. The Oedipus complex is dealt with in Chapter 9. The only or favorite child in adult life in Chapter 10, and anal eroticism, and its influence on the production of character in Chapter 11. These three chapters bring a further elaboration of Freud's sexual theories.

The closing chapter—Freud's theory of wit—brings wit into relation with dreams and the unconscious. Freud begins with a brilliant analysis of the technique of wit, then considers the different tendencies of wit and finally shows how pleasure results from the technique and the tendency of wit.

To one not familiar with Freud's own writings, which even in the translation are difficult reading, the book by Brill will give a very good introduction to the views and teachings of this author, and although it is difficult to accept all of Freud's claims regarding the sexual factor in the production of neuroses etc., it cannot be gainsaid that he has helped us more than any one before him to penetrate into the maze of hysterical symptoms which without psychoanalysis must always remain a riddle.

NEUHAUS.

**Gifts of Surgery to Medicine.**—Moynihan points out that medicine in its quest of knowledge may rightly levy a tribute from every other science with which it comes into contact. Its doctrines and its practice are tested and may receive support or be refuted by work accomplished in other fields. Surgery in recent years has proved a powerful helpmeet not only in the elucidation of problems of internal medicine, but also by reason of the light it has brought to bear on the functions of many of the organs in the body. The experimental method, as a mode of inquiry, is not excelled in value by any other, and no experiments, Moynihan holds, can claim an equal rank with those which are a part of almost all surgical procedures. The chief glory of the surgeon comes from the dedication of his powers to the service of an individual; but there is a cause also to be served. In every operation something may be learned, not only of those disorders which call urgently for relief, but of other associated, or it may be separate, conditions which chance at the same moment to be present. The researches so carried out on a human patient are performed with a sterner sense of responsibility and with a graver ritual and are impressed by more relevant influences than attach to any other form of inquiry. Their results are accordingly of far higher value. Clinical research, when sedulously conducted and illuminated by the disclosures made on the operating-table, affords the most accurate of all methods of investigation into the diseases by which man is attacked. The succor of an individual should mean also the taking of a step forward in the solution or the better understanding of the manifold and perplexing problems of disease.—British Medical Journal, July 26.



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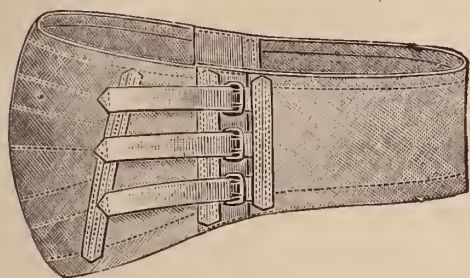
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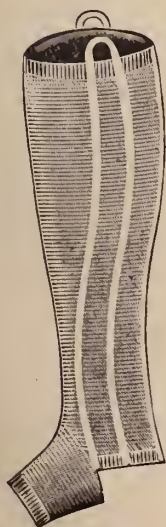
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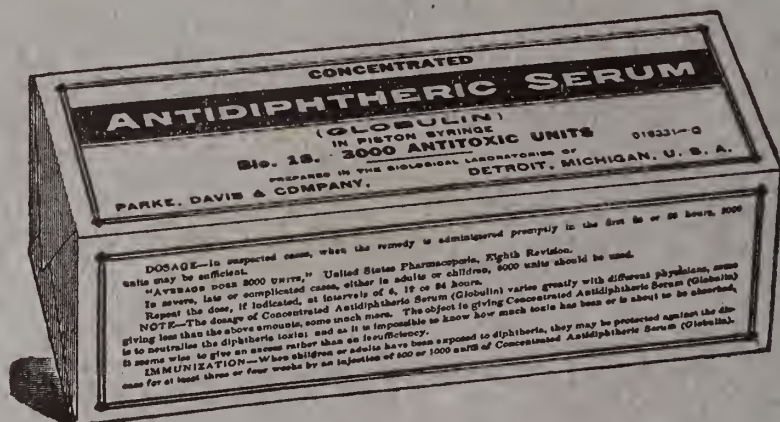
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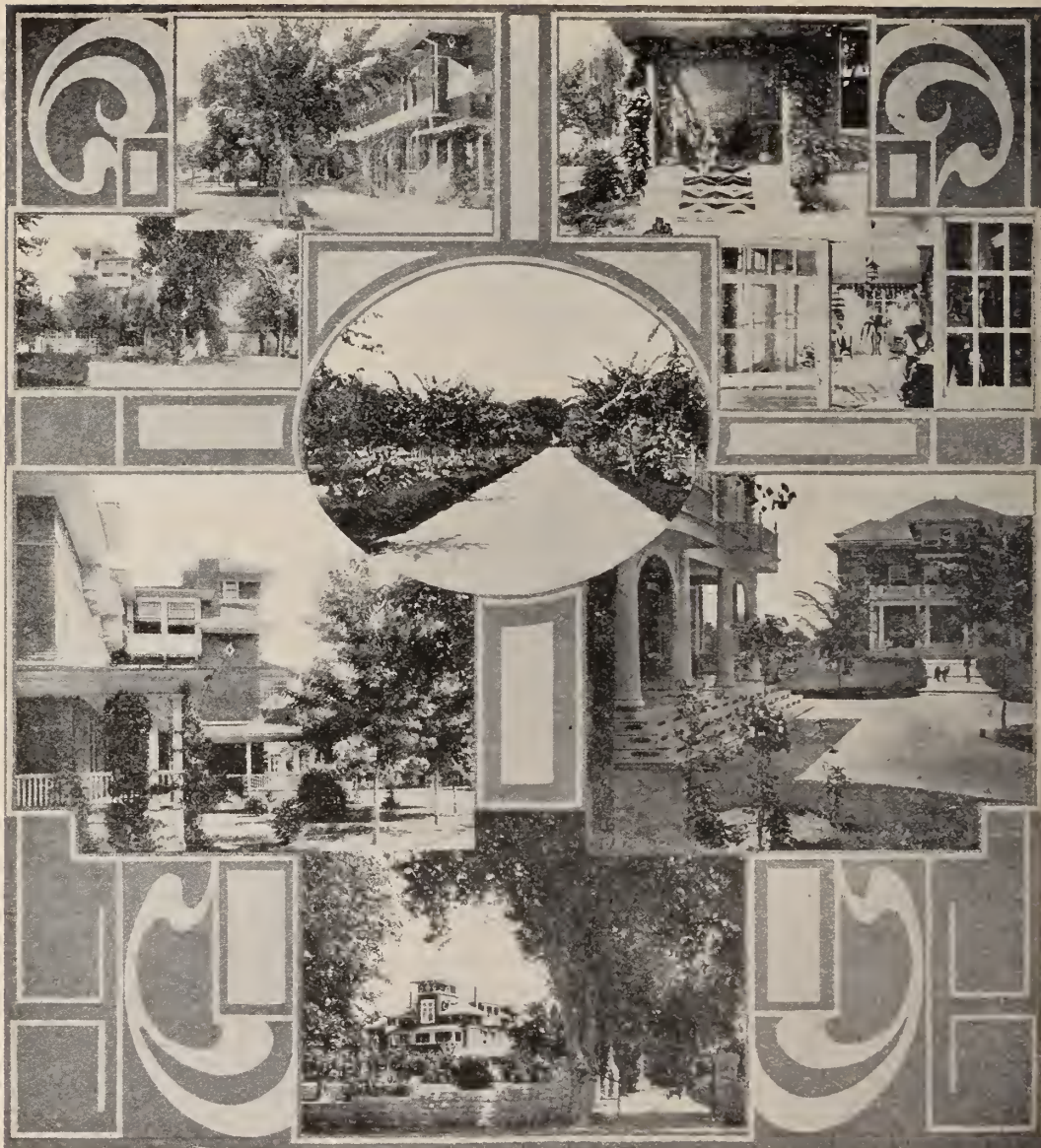
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George A. Moleen, M. D., Denver

EDITOR, Charles S. Elder, M. D., Metropolitan Building, Denver

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OCTOBER, 1913

NO. 10

## Editorial Comment

### THE FORTY-THIRD ANNUAL CONVENTION OF THE COLORADO STATE MEDICAL SOCIETY.

Colorado Medicine was largely in the hands of the printer while the Forty-third Annual convention of the Colorado State Medical Society was in session at Glenwood Springs. The transactions of the House of Delegates is furnished to this number by the prompt work of the stenographer. These reports show the important facts that Dr. O. M. Gilbert was elected president for the next year and Boulder, his home city, is to be the next meeting place for the society.

Many members had longed to get back to Glenwood Springs, remembering the pleasant and profitable experiences of some years ago, when the society met there. Their hopes were abundantly fulfilled. The attendance was generous. The welcoming pool was still there. The Hotel Colorado furnished ample quarters for the visitors. The program was instructive and the papers were eagerly discussed as will be seen by the varied contents of this journal during the year which will follow the meeting.

## SCHOOLS FOR HEALTH OFFICERS.

Beginning this fall Harvard University and Massachusetts Institute of Technology are to maintain in co-operation a School for Public Health Officers. The facilities of both institutions are to be available to students in the school and the certificates of public health (C. P. H.) is to be signed by both President Lowell and President MacLaurin.

The object of this school is to prepare young men for public health work, especially, to fit them to occupy administrative and executive positions such as health officers or members of boards of health, as well as secretaries, agents and inspectors of health organizations.

It is recognized that the requirements for public health service are broad and complicated, and that the country needs leaders in every community, fitted to guide and instruct the people on all questions relating to the public health. To this end, the instruction of the new school will be on the broadest lines. It will be given by lectures, laboratory work, and other forms of instruction offered by both institutions, and also by special instructors from national, state and local health agencies.

The requirements for admission are such that graduates of colleges, or technical and scientific schools, who have received adequate instruction in Physics, Chemistry,

Biology and French or German, may be admitted to the school. The medical degree is not in any way a pre-requisite for admission, although the Administrative Board strongly urges men who intend to specialize in public health work to take the degree of M. D. before they become members of the School for Health Officers.

Of more local interest than this announcement is the fact that Mrs. Charles Denison has made a gift to the University of Colorado for the establishment of an institution for research in medicine. The gift was made as a memorial to her son and is to be devoted to the construction of the Henry Strong Denison Institution for Medical Research. Within a month one wing of the new building will be opened and in operation under the directorship of Dr. A. R. Peebles. It will be the especial function of this new department of the university to furnish graduate instruction in public health matters and to extend our knowledge of them.

This, then is the work offered by universities. Is it supererogation? Who is to pursue these courses unless cities announce that they are ready to employ men that have made a special study of public health matters? When it was proposed to the people of Denver that they go abroad for their health officers, the proposal was rejected as an insult to local medical learning and as an offense against patriotic sentiment.

It is a hopeful sign that the need of particular training in public health work has been recognized, that eastern universities are offering to supply it and that, through the generosity and maternal affection of a Colorado woman, such an enterprise is to be given a home in this state in memory of a young man whose early death deprived medicine of much promised promotion.

## *Original Articles*

### *TEACHING MEDICINE IN DENVER.*

EDWARD JACKSON, M. D., DENVER.

The problems of medical education may be, as President Pritchett avers, more educational than medical. But it is the medical not the teaching profession that understands the objects to be accomplished and the difficulties to be overcome. It is from the medical profession that most of the educators are to be drawn who will solve these problems. It is to the medical profession they must look for support and appreciation of their efforts, and for a wise and intelligent judgment of the educational product that they finally put out. It is the medical profession that will be uplifted and made efficient by the success of improved methods. And it is the medical profession that must educate the general public, which has the largest interest in improved and more efficient doctors, to give that financial support and to take that attitude toward teaching that alone can render the satisfactory solution of these problems possible. Because these problems of vital importance to us are outside of our ordinary, general professional thought and experience, there is all the more reason that we should give them some careful study and intelligent discussion.

The principles underlying medical teachings, the greatest difficulties to be overcome in making it sound, practical, efficient, properly proportioned and correlated, are much the same in Denver as elsewhere; and it is general needs and broad issues that we can discuss with most profit. But perhaps the discussion can be made more direct, practical and fruitful, if it is illustrated by the concrete facts and situa-

\*Read before the Medical Society of the City and County of Denver, September 16, 1913.



tious in which we are immediately interested, if we think of these problems as calling for solution now and here in Denver.

It will help us to understand the situation and the issues of today if we glance back over the recent history of medical teaching and of medical science. I first attended medical lectures in the University of Pennsylvania thirty-eight years ago. At that time almost every medical school in America was or had recently been a proprietary undertaking. The fees of the students after paying the rent and maintenance of two or three lecture halls, and possibly for a demonstrator of anatomy, were divided among the seven professors. There was every motive for making the number of students who furnished the fees as large as possible; and for keeping the number of professors who divided the fees as small as possible. The entrance requirements demanded little knowledge of arithmetic on the part of students; but every professor knew that a fraction was increased either by increasing the numerator or by diminishing the denominator.

The instruction consisted essentially of two courses of didactic lectures somewhat meagrely illustrated. Senior and junior students sat together. Some of the professors took two years to go over their whole course; others repeated the same lectures except as they introduced each alternate year a distinct collection of jokes to diminish the somnolence that a recital of scientific facts tended to produce. Still others gave just the same lectures year after year.

The class of 1878 was the last two-years' class sent out from the University of Pennsylvania. Before that students had been encouraged to take three years in the medical school by giving them a chance to pass final examinations on anatomy, physiology, chemistry and *materia medica* at the end of the second year. While I was a student laboratories of histology and pathology

were first provided, under Prof. Wormley work in the chemical laboratory became of practical importance, and the University had already begun to use its new hospital. Before that Harvard and the University of Michigan had established three-years' courses. Bellevue tried soon after to make the advance, but quickly fell back to the two years' plan when its classes fell off, and the numerator diminished. The medical department of Johns Hopkins University was still ten years in the future, and the post-graduate medical school was yet to be created.

With the changes in medical teaching that have occurred in the last quarter of a century most of us are more or less familiar. Having sketched the conditions from which they started, it is not necessary to trace them in detail. Despite timidity and unwillingness to give up financial perquisites, medical schools have lengthened the course to four years, professors and instructors have been put on definite salaries. Even where these are represented by zero, they no longer depend on the number of unprepared youths who can be induced to study medicine. The graded course, of some sort, has become universal, laboratories are essential, and clinical instruction begins to take the place it should occupy in the medical curriculum.

Meanwhile there have been advances in medical science. In 1875 the Atlees in America, and Spencer Wells, Kieth and Lawson Tait in Great Britain, were completing their fight to establish ovariotomy as a recognized surgical procedure. The work of Lister was beginning to excite interest and bring recognition, although it was still to be fifteen years before aseptic surgery was perfected and accepted. When J. G. Richardson in 1877 was convinced of the germ theory of contagious diseases, his conviction had to rest merely on the work of Pasteur and Lister, and the isolation of the anthrax bacillus by Robert Koch. The ad-

vent of cerebral surgery, the discovery of typhoid, tubercle and diphtheria bacilli, the gonococcus and the plasmodium of malaria, came in the next decade. Our knowledge of Malta fever, amoebic dysentery, the plague and lepra bacilli, hookworm disease, epidemic meningitis, sleeping sickness, syphilis and a host of other diseases, have been placed on a scientific basis since. Serum diagnosis, serum and vaccine therapy, the role of internal secretions in nutrition and disease, the facts of anaphylaxis, the side chain theory of immunity, the discovery of the Roentgen ray, and its application in medicine, the scientific working out of specific chemo-therapy in salvarsan, are some of the advances made since that time.

Consider how much the work of the student of medicine has been increased by these advances in medical science; how much of modern surgical technique is associated with asepsis; how many different operations that are to be learned have been made possible in the cranial, thoracic and abdominal cavities by aseptic surgery. Think of the problems to be dealt with in the surgery of the thyroid and the hypophysis. In the specialties consider what may be done in the nose and nasal accessory sinuses, or for the partial or complete preservation of the eye after injury, or the recognition of general diseases by the eye symptoms. How many new conditions are revealed and how many facts regarding disorders previously known, by a new diagnostic resource, like the Roentgen ray: and each revelation raises new problems in therapeutics. Review mentally the new science of bacteriology, the technique it has developed, the enormous number of new organic forms it has called attention to, which medical students must learn to recognize; the problems of the share these forms have in the production and natural history of diseases, the dependent but still closer practical question of how they are to be dealt with; to say nothing of serum diagnosis

and serum treatment, of which every educated physician must know something, however much we may specialize. These hints suggest only a small part of the enormous increase of medical knowledge and medical accomplishment that the medical student must attempt, that has come through the advances of the science and art of medicine in the last generation.

In view of this it is not strange that the one device for improving medical education, that has been first and universally adopted, is to lengthen and crowd the curriculum. The period of study has gone from two to three, and three to four years, and now is rapidly passing from four to five. Meanwhile every particular teacher has struggled for more hours for his branch. Each critic of the curriculum points out some vital subject that has been absolutely neglected. Each new recruit comes with an important addition to be made to the subjects taught. On the other hand the period of life during which development takes place, the years in which educational possibilities are at their maximum, the period when preparation for the issues and duties of life must be made, has probably not lengthened one day. And still the flood of discovery, invention and new acquirement goes on, and will go on in the near future at least as swiftly as ever.

We are facing new problems in medical education, and they are extremely important. Our educational ideals, methods and standards must advance, or we will be swamped by being overloaded, or wrecked by the rush of events which should bear us swiftly forward. As I see it, three things are immediately and imperatively necessary in the teaching of medicine: 1. Wise provision for healthy specialization, without disintegration of our profession. 2. Recasting of the curriculum, so that as new matters are introduced old ones of relatively less importance shall be omitted. 3.

Increased efficiency of our teaching methods.

Of the question of specialization I shall say nothing this evening. Making room in the curriculum for the new by casting out the old is a method of improvement that must be undertaken in serious earnest. It must be recognized that though the things we have studied in college and have forgotten had some educational value, this was not necessarily greater than the educational value of things that must be studied and remembered; and that specialization in work makes certain facts useless and merely cumbersome, and their acquirement sheer waste of energy on the part of the modern medical student. For instance, much of the materia medica and pharmacology of past years should be absolutely cut out of the curriculum for the surgeon, the specialist, the internist. Even the country practitioner has far greater need of an acquaintance with some of the newer resources of surgery or medicine. Again, in anatomy, much of the minute knowledge of the relations of parts and something of the technique of dissection are useless to the large part of the profession that will never undertake to do certain operations or to make certain differential diagnoses. We want to begin to recognize two departments of anatomical teaching—the one general, required of all medical students; the other more minute and carried farther in each particular region to meet the requirements of the specialist. There is no other way in which the teaching of anatomy can be made to meet all the requirements of modern medical practice.

This revision of the curriculum can only be accomplished in such a way as to constitute a real advance by a great deal of mutual discussion, among those who are interested and engaged in teaching of each particular branch. It is for this purpose that here in Denver we have endeavored to form faculty groups of those engaged in

the teaching of each branch. At least this is the great work that awaits these groups as soon as the more immediate, but really less important, details of hours and assignments of work have been disposed of. It is really a subject for discussion in the County Society, what are and what are not the most important topics to have a place in the medical curriculum. It is of vital importance to the future of our profession and should command our best thought, directed to it from every special and individual point of view. For instance, let an evening be given to consideration of what are the most important things the recent graduate in medicine should know about tuberculosis, and how many of these should be taught by the teacher of pathology, of surgery, of physical diagnosis, diseases of the chest, orthopedist, the teacher of ophthalmology. Would one evening be adequate for such a discussion, or for a similar one about syphilis?

With reference to the general efficiency of medical teaching there is reason to fear that it is now extremely low. With the great press of things to know and things to learn to do, it seems probable that often one-half the time of the student is being wasted. This comes about in various ways quite apart from apathy and laziness of individual teachers. Few teachers of medicine have much troubled themselves about questions of educational method, order or correlation of studies. To express something they have to say in decent English, to make sure that the lazy student is not bluffing them, and to crowd all the particular subjects into too few hours, is about all that they can undertake.

To connect the fact to be learned immediately with the fact already established in the student's mind, to perceive the false impression that acts as an insurmountable obstacle to the entrance to the new idea, to make the peculiar presentation of the subject that will at once lay hold of his past



experience and acquirements, are refinements of teaching too rarely attempted. But they are the things to make teaching efficient; and to effect a saving of the student's time is enormously desirable. "I have been trying to see the back of the eye for six months," said a student that I stood over for the first time that he tried to use the ophthalmoscope in our clinic. It only needed the correction of a mistake in the way he sat and held the instrument and placed the light to enable him to do it. It is safe to say that nine-tenths the time he had spent in his effort to do this had been wasted. Every one of our junior class taking section work on the ophthalmoscope last year saw the optic disk at the first or second lesson.

In this matter of medical teaching we have been sadly handicapped by traditions, which held as medical teaching, what was much more of a method of hypnotizing medical students into pouring money into the treasuries of proprietary medical schools, for the sake of a diploma that should admit to the medical profession. The old-time medical lecture utilized to the full the psychology of the crowd to impress its hearers with the greatness of the profession into which the coveted diploma would admit them, and the greatness that might be attained therein, as illustrated by the lecturer. Incidentally, it taught something about medicine and inspired students to effort in self-education. But what an inadequate, unsuitable thing it was to serve as the main reliance for the teaching of medical science and art.

The idea that a physician can be trained for his work chiefly or to any large extent by listening to lectures has gone among the absurdities and temporary aberrations of the past. It argues badly for our pedagogic intelligence and activity that it has lingered so long. The function of a physician is not merely that of a receptacle for knowledge, no matter how

carefully selected, well arranged, and closely packed that knowledge may be. His business is to do things; whether this doing be the active mental process that makes a diagnosis, the delicate manipulation that extracts a cataract, or the muscular exertion that reduces a dislocated hip. Knowledge he must have, exact and varied. But only that which he can immediately command and relate to the problem in hand will be of any service to him. Far more important than adding to his store of facts is practice in the use of his hands, his sight, his hearing, and of those mental processes that alone render facts serviceable. We actually learn by doing and in no other way.

Think of the pilot becoming a pilot by reading and lectures; of the musician becoming a musician by reading and lectures, of even a blacksmith becoming a blacksmith by reading and lectures. Is it more important for the pilot to be alert, and hold at his immediate command all his former experience, than for the physician? Are reefs and snags more important to foresee, than the dangers that beset the channel of disease? Will the surgeon's touch be more confident exact, efficient, at his first attempt than the musician's? Is it more important that the hammer should strike the iron exactly, than that the incision should be exactly placed in a quivering eye?

We largely see the absurdity of didactic teaching, but habit lingers long. Efficiency in the teaching of medicine demands with an emphasis not yet appreciated, for the fundamental medical sciences, the laboratory; for practical medicine, the hospital and clinic.

The fundamental branches we need not here consider. It becomes more and clear that the medical course consists of two very different parts; the one a branch of the general university teaching of science; the other something unlike any other kind of

teaching, and far more closely related to our every day thinking and work. Every active member of the medical profession can exert an important influence for the improvement of clinical teaching. First he can influence public opinion to provide the material and conditions essential for such teaching. Second, he can criticize and pass judgment upon the results of that teaching. Third, a much larger proportion of the profession than has ever done so, as large a proportion as may desire to do so, can take an active part in the clinical teaching itself. Clinical teaching is best and most efficient when there is but a single student for each teacher; and the relation of personal contact is continued long enough for teacher and student each to become familiar with the other's mind. Such a relation supposes a separate teacher for each student, nay a teacher for each branch that each student is to be taught. Such ideal opportunities are reached only by the bright, aggressive, advanced student. But for the great mass of medical students it is desirable that the ideal be more nearly approached.

Here in Denver this thought especially requires to be emphasized. There has been an impression that in the scramble for academic honors, in the reaching out for titles that would promote practice, and in the mutual swallowing of medical faculties in the combination process, we were getting too many teachers. This impression is the reverse of the truth. It has been based largely on our recollection of a proprietary school with its seven professors, the number rigidly kept down because it was the divisor of the students fees. The impression has been strengthened by the things that these same professors said about their suspected rivals, the post-graduate schools, when they started out with large faculties thirty years ago—things that the friends and admirers of the great professors distributed through the profession, and which

still influence our thinking on this subject.

If the old plan of the seven professors was the best, then to have 117 names on the teaching staff of our medical schools is absurd. But is it so absurd when compared with the more than one hundred recognized teachers connected with each of the medical departments of the larger German universities? Is it absurd compared with the 181 on the teaching staff of the University of Pennsylvania, or the 217 given in the last announcement of the Medical Department of Columbia University, or the 414 appointed and recognized teachers of the University of London, where courses given by teachers not in that list are also accepted. It does not speak well for our knowledge of medical education as it exists today, that we should think the first step toward improving the teaching of medicine in Denver is to decrease the number of our faculty. By what title the members of this teaching staff shall be designated, is a matter of no importance, compared with the questions: Are there enough of them? Is their work properly coordinated? Are they properly prepared for the business of medical teaching?

Clinical teaching besides requiring clinical teachers requires patients, whose condition teacher and student can study together. It is a kind of study that cannot be carried on in large classes. "The English clinical teacher" remarked one of the most distinguished of them, "is the teacher of his clerks." "No matter who or how many attend his lectures" adds Flexner, "his pupils are specifically those with whom he talks at the bed-side."

Some idea of the extent to which clinical teaching may be carried on, with advantage to teachers, students, and patients, may be obtained from a review of the work of the kind done in London. In that one city there are twelve different hospital medical schools. Too many independent proprietary institutions, but not too many

to furnish the clinical teaching that London students need. These schools are supplemented by thirty-nine other teaching hospitals; among which are some of the most eminent centers of special instruction in the world, like the National Hospital for the Paralyzed and Epileptic, the Hospital for Consumption and Diseases of the Chest, Brompton, and the Royal London Ophthalmic Hospital, formerly at Moorfields.

The extent to which these London hospitals are used for teaching contrasts strongly with the meager hospital opportunities afforded in this country. St. Bartholomew's, with 687 beds, has a paid house staff of twenty-seven, to which are added: "the clinical clerks, the obstetric clerks, the clerks to the medical out-patients, the dressers to the surgical in-patients, and the dressers in the special departments, chosen from the students." In the London hospital the qualified appointments made annually are 141; and more than 150 dressers, clinical clerks, etc., are appointed every three months. Every German university in some way utilizes the clinical service of several hospitals, which it may own, support, or manage by contract; and in these hospitals every patient is available for clinical teaching. This material proves ample to furnish the clinical opportunities for which American students cross the ocean, and on which the fame of German clinical teaching has been built.

It is sometimes thought that Denver is still scarcely large enough to furnish sufficient clinical material for a good medical school. Of the twelve German and Bavarian universities with complete medical departments only four—Königsberg, Berlin, Breslau and Munich—are situated in cities as large as Denver. Kiel, which comes next, with its population of 163,710, provides for one thousand medical students annually. The universities of Greifswald, Göttingen, Erlangen and Marburg are sit-

uated in four towns having a combined population, by the last census, of 101,637. Bonn and Würzburg are cities of between 80,000 and 90,000 each. True, these cities are situated in densely populated regions; but with other medical centers not far removed, and in populations that do not travel long distances. So far as mere population is concerned, Denver, with its 213,000 inhabitants, the medical center for two millions of people, might well compete with any of them. The fact is our clinical material is abundant, but it is not utilized.

This subject of material for clinical teaching has many aspects. Some might be discussed in a faculty meeting, some by a hospital staff; but the general attitude of patients, of the public and even of the medical profession with regard to it, is to be considered by the profession as a whole in the County Medical Society. There are traditions that to be used as a subject for clinical teaching is a degradation put upon the destitute and friendless. This attitude toward clinical teaching must be removed. When the students are of the character and education that will rightly entitle them to admission to the medical profession, no proper foundation for such a feeling may exist. With intelligent patients a little reasoning, a brief presentation of the importance of the scientific side of medicine and its cultivation by the study of actual cases of disease, generally removes all prejudice and objection. Every patient thus converted becomes a missionary to influence the community. It is a real service to our profession whenever such a convert is made. Only as the general public becomes convinced of the propriety and desirability of using every available case of disease as a means of educating doctors to combat disease, can we hope to insure the desirable attitude toward clinical teaching on the part of those who manage hospitals.

On every practitioner there rests a duty to teach the community in this direction.



Only thus can we repay the benefit received from the teachers from whom has come that stock of learning that gives us occupation, livelihood and a respectable standing in the community. The exhibition of patients to our professional colleagues, in our society meetings, not only adds to the interest and value of the meetings; it gives medical science a better standing in the community and helps to remove an obstacle to good medical teaching. With the objection to clinical teaching removed; with the development of laboratories that is sure to come; with the advantages of a climate that reduces to a minimum the dangers of student life; with the careful correlation of our teaching that can be brought about by discussion, mutual concession and the growth of the team spirit by working together, it is certain that Denver will become one of the important centers of medical teaching in America.

### *THE ROLE OF CATHARSIS IN OPERATIVE CONDITIONS.\**

BY GEORGE H. CURFMAN, M.D., SALIDA.

The advance of our knowledge regarding the physiology of the small and large intestine during the past ten years; the importance of careful elimination, incident to operative conditions; the dangerous errors frequently committed by both practitioner and layman in the matter of untimely catharsis in operative conditions, have prompted the presentation of this paper.

A careful review of the advance made in the physiology of the intestinal tract, is necessary for the proper conception of the use of cathartics. Immediately after the ingestion of food into the stomach the liquid stomach contents begin to pass at once into the duodenum. The rate of outflow from the stomach is governed by the

pylorus. The pylorus relaxes and allows the stomach contents to pass into the duodenum, as fast they are neutralized by the alkaline succus entericus, but no faster. The food, reduced to a liquid state, is passed steadily onward to the cecum. It has been ascertained by means of radiograms, taken after the ingestion of bismuth soup, that it requires, as a rule, about six hours for all of it to pass into the cecum. In the cecum, the mass remains for 12 to 24 hours, no longer. Throughout the passage of the small intestine the contents are maintained in a semi-fluid state, which favors ease of movement through the canal and readiness of absorption.

In the cecum and ascending colon putrefaction and fermentative decomposition occur in the stagnant mixture of indigestible matter, food, cellulose, water and bacteria. In the first part of the large intestine the last of the food disappears. The cellulose may undergo changes, which result in its being utilized by the body and the water contents begin to be reduced. Thus the main functions of the colon are those of storage and periodic riddance of waste; both mechanical functions. By the time the contents of the cecum and ascending colon reach the transverse colon, they may be found as firm as that which is discharged from the rectum. This change of contents in the different portions of the colon corresponds to a difference in the motor activity of the two regions.

In the jejunum and ileum, peristalsis is continuous as long as anything solid stimulates the mucous membrane. Here the waves of peristalsis are short, worm-like and follow each other closely. In the large bowel, on the other hand, peristalsis is intermittent and powerful, and may involve along segment at one time. In the proximal colon, according to Cannon, the characteristic movement is anti-peristalsis or anastalsis, a movement of waves backward toward the cecum. According to Cannon

\*Read at a meeting of the San Luis Valley Medical Society June 4, 1913.

the anastaltic waves rarely run continuously for a long time. A series of waves, at the rate of about five per minute, can occasionally be seen running for about four or five minutes, then ceasing. The waves start at the nearest ring of constriction and appear when a fresh mass of material is forced from the small intestine into the colon.

That such an anastalsis exists in the human colon is the conclusion of many observers. Associated with the anastaltic movement are the peristaltic movements which result in a shifting of the mass of contents, rhythmically forward and backward, the result being a thorough mixture and exposure of the mass to the absorbing mucosa. Cannon considers then that the first portion of the large intestine should be regarded as a place where digestion and absorption must continue. The distal colon, which may be regarded as beginning in man, roughly near the transverse portion, contains, normally firm and formed masses of waste material.

From now on the characteristic activity of the intestinal wall is an onward moving wave or diastalsis, which rapidly forces the fecal mass to the sigmoid. After such a functional effort on the part of the colon the colon may rest for many hours before its next cycle of peristalsis begins. Reflex stimulation below the sigmoid causes evacuation.

The brief summary given explains the mechanical factors of digestion. The other factors incident to digestion and absorption, are still far from solution and comprehension. We are all familiar with the steps of digestion in the upper intestinal tract, as explained by physiological chemistry, but the exact manner in which the mucous membrane cell takes up the products of digestion and passes them into circulation, is not well determined. Some cells produce ferments which alter the food substances chemically, so that other cells may

absorb them. Among other functions, the small intestine, according to Fleiner, produces a ferment which destroys bacteria. In the ileo-cecal region, bacterial activity is greatest. Certain varieties of bacteria aid digestion by destroying the digestive ferments, while others cause fermentation and putrefaction of unabsorbed products of carbo-hydrate and proteid food. Still other bacteria seem to have a mission of regulating the number and life history of the former varieties. The bacillus coli communis group probably belong to this class. After the fluids have been absorbed from the bowel contents in the colon and the fecal masses are hardened, the bacteria are found to be mostly dead. According to Strausberger one-third of the volume of hard feces is made up of dead bacteria.

According to Kendall the inter-relationship between the various bacterial groups and between them and the food products and the physiological elements of the intestine must be at a certain equilibrium. The life history of the majority of these bacteria is short, lasting but a few hours. Before meals the small intestine is nearly, if not quite sterile, and in the large bowel the bacteria die rapidly, owing to autotoxic activity. After a full meal the bacteria proliferate with astonishing rapidity. The greatest inter-dependence among fecal bacteria exists between the fermentative and putrefactive types—the former decomposing the carbohydrates and the latter the proteids. A disturbance of this relationship will cause excessive gas formation and perhaps diarrhea, the symptoms of so-called intestinal fermentation.

Quain states that an individual who eats habitually a varied diet; who secretes normal gastric, pancreatic and intestinal juices; who has a properly functioning neuro-muscular apparatus for peristalsis, and who has an evenly balanced colonic bacterial flora—such an individual enjoys intestinal comfort. When any of these fac-

tors is deficient or excessive in its activity, the intestinal balance is upset and the individual suffers discomfort and symptoms in proportion to the derangement.

Those who would give cathartics prior to operation have in mind chiefly the propulsion of intestinal contents, but Mall suggests the conception that the successive contractions and relaxations of the intestines in the peristaltic wave, not only propel the intestinal contents, but produce an alternate ischemia and hyperemia of the intestinal wall. These circulatory changes aid absorption from the mucosa into the general circulation.

The effect then, of cathartics, in acute abdominal conditions, is to increase the absorption of products which are now toxic. Nature endeavors to reduce this absorption by a cessation of peristalsis in the region of inflammation. Increased peristalsis, as produced by cathartics, is thus defeating nature's attempt at localizing the infection. Furthermore, the increase of peristalsis interferes with the formation of protective adhesions.

It is almost an universal custom to give some form of cathartic prior to operation. In the light of the physiological facts presented, it would seem unwise, particularly in an acute abdominal condition, to give any cathartic. Of the various cathartics given the salines would seem to be most harmful. A saline in concentrated solution, produces a transudation of fluids from the small intestine, thus interfering with the production of the normal ferments in the small bowel; the presence of the salt in the ascending colon interferes with the absorption of fluid, the partly digested food, hurried into the colon makes ready material for the proliferation of bacteria, which in turn give rise to increased gas formation and toxic products.

According to a number of authorities, even calomel is harmful, as it has been proved that it irritates the intestinal mucosa

and favors bacterial proliferation. According to Quain, oil is probably the least harmful cathartic, as it does not destroy the bactericidal properties of the succus entericus. He states that it forms a good lubricant for the colon and surrounds the food particles, retarding bacterial activity and thereby reducing gas formation. In conditions requiring anesthesia other than abdominal, the arguments against cathartics are less forceful, but even here the post-operative nausea and vomiting are less marked where the upper intestinal tract is not disturbed. It is our custom, in all surgical conditions requiring anesthesia, to dispense with cathartics, prior to operation. The lower bowel is emptied by means of high enemas of either normal saline or soap suds. Two or three successive high enemas are given, four to six hours apart. The enemas should be given with the patient in a recumbent position, and should be retained as long as possible. In emergency cases, in which no effort to relieve the intestinal tract has been attempted, recovery is remarkably free from post-operative complications, as compared with such cases in which purgation has been previously attempted.

In the post-operative treatment the same effort to aid nature is continued by abstaining from the use of cathartics for the first few days, reliance being placed upon the use of various enemas to relieve the lower bowel of gas and bowel contents.

In no acute abdominal condition is the danger of untimely catharsis more patent than in acute appendicitis, or mechanical intestinal obstruction. In the former condition the patient is usually at fault and calls the physician after a number of cathartics have been given. A stormy convalescence is the usual result. In the latter condition the physician is frequently at fault and it not infrequently happens that the patient is plied with such drastic cathartics as croton oil, with an almost univer-



sal fatal result, even with operative interference. In this condition, if high enemas do not speedily relieve, operative interference should be undertaken, and under no circumstances should any cathartic be given.

To summarize briefly, modern physiology of the gastro-intestinal tract has established the following facts:

Food passes normally from the pylorus to the colon in from four to six hours, and the greater amount of absorption of food values takes place in this passage. The food in its passage from the small intestine is rendered practically sterile under normal conditions, by a bacterial ferment elaborated by the intestinal mucosa. In the proximal colon the waste products are churned to and fro, and some residual digestion may occur. Bacterial activity is here very great, producing both fermentative and putrefactive changes, as well as destroying the digestive ferments. A third group of bacteria apparently have the function of regulating the growth of the other types. The proximal colon also absorbs practically all fluids from the residual food products. The distal colon is concerned chiefly with expulsion of the desiccated fecal masses. The maintenance of a certain equilibrium between the physiologic and bacterial processes in the intestine is necessary for normal bowel function.

A consideration of these facts leads to the conclusion that all forms of catharsis, especially in acute abdominal conditions, are harmful. A restricted diet and high enemas would seem to furnish ample and safe preliminary preparation of the gastro-intestinal tract.

Normal saline enemas, during the post-operative period, again seem preferable to the use of any cathartic until all danger of complications is passed.

## *THE NATIONAL INSURANCE ACT OF GREAT BRITAIN—A REVIEW.*

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Some seven months of the past year, spent in the hospitals of England, Scotland and Ireland, have given me the opportunity of coming into contact with that phase of industrial life, which is directly concerned with the operation of the National Insurance Act, now in force in Great Britain.

By request and courtesy of COLORADO MEDICINE I am privileged to place before its readers a short account of the act, with special reference to its effect upon the wage earners, and its relation to the medical profession in the British Isles.

Setting aside the political aspects of the act, and considering it only from an economic standpoint, there can be no doubt as to the wholesome influence of the measure upon the general efficiency of the working man, even though it is admittedly tentative.

The bill was first introduced into the House of Commons, after a period, it is said, of two and one-half years' study and preparation by its author and most ardent supporter, the Hon. Lloyd George, Chancellor of the Exchequer, on May 4th, 1911. It consists of two parts, covering one hundred and forty pages of printed matter, with an amendment bill of twenty-one additional pages. The act and amendment bill have been placed in the library of the Denver County Medical Society, and may be seen upon request.

The content has in view the object of providing insurance against loss of health; the prevention and cure of sickness, and insurance against unemployment for a certain class of wage earners in the British Isles, exclusive of the Isle of Man and Channel Islands. This act includes in its

scope some fifteen million people, from the ages of sixteen to sixty-five, of both sexes; first those employed and earning less than \$800 per annum; second, those unemployed, but whose income does not exceed \$800 per annum. This necessitates certain distinctions, hence those insurable are separated into two main divisions, the Compulsory contributory class, and the Voluntary contributory class.

The Compulsory class, with certain minor exceptions, applies to all persons of either sex, and any nationality between the ages of sixteen and sixty-five who are employed in the United Kingdom, and not earning \$800 per annum, such as: artisans, mechanics, miners, clerks, shop assistants, servants, soldiers and sailors (with exceptions) railway employes golf caddies, waiters, cab-drivers and boatmen working for hire, persons under apprenticeship, etc.

The Voluntary class, on the other hand, includes all those between the ages of sixteen and sixty-five, whose income does not exceed \$800 per annum, and who are either engaged in some regular occupation and are wholly or mainly dependent for their livelihood on the earnings derived therefrom; or such persons who have been insured for a period of five years or more in a so-called Friendly or Trade society, hereinafter explained. This class includes blacksmiths, small tradesmen, village joiners, etc. Should a voluntary contributor earn over \$800 a year before the expiration of five years after becoming insured, such contributor must forfeit the paid premiums and be barred from insurance under the act. Persons excluded for any cause from the compulsory class may become voluntary contributors. It is estimated that the latter class will number upwards of two millions.

Besides these two classes, a special class has been organized known as the Postoffice contributors. This comprises all persons rejected by approved societies incorporated

into this act. And here it may be well to explain briefly the operation of these so-called "approved societies."

Before the National Insurance Bill was enacted, certain associations, known as Friendly Societies, existed for the benefit of the wage earning classes, with rigid entrance examinations and moderate dues, and the candidate was, in every instance, a selected risk. These friendly societies were entirely free from Government control, but when the insurance act was being drafted, it was seen to be necessary to include these societies in the scheme, in fact for the government to absorb them, without destroying any of their rights or privileges and to make it possible financially for them to take increased risks and be placed under government supervision. These friendly societies, at once, thus became the means of putting the act on a working basis, and after adopting certain requirements which the government exacted, were known as Approved Societies.

By the terms of the act, all wage earners coming under its provisions, are urged to join an Approved Society, admission thereto depending upon the special by-laws governing each society.

All insurance contributors not members of an Approved Society must join the Postoffice class, which has certain well defined benefits, though not equal to the other two classes.

The problem of administration which the government was called upon to solve was greatly complicated by the practical necessity of insuring both good and bad risks of all ages, and the providing of immediately available benefits. To overcome these difficulties, concessions were made by the government to the Friendly Societies, by providing a financial basis for the added risks involved in accepting less desirable members than formerly. Thus the Postoffice class is composed in large measure of the

undesirables, though the government hopes that in time this class may be greatly reduced by the improved health conditions, and a more scientific application of the principles of the act.

Regarding the cost of administration it may be sufficient to say that in the Compulsory class each male contributor must pay a premium of about eight cents per week, women contributors six cents per week, and the employer six cents a week for each and every employé. In addition to this the government undertakes to contribute, in the case of men two-ninths, and of women one-quarter of the total benefits disbursed under the act.

Thus the employer and state all share in the expense of administering the act and it does not, as formerly rest on the wage earner alone, with the advantage also that premiums are not so heavy and benefits greater.

The Voluntary class who are practically their own employers pay the same rate as the wage earner plus the employer's share, equal to about fourteen cents per week for men and twelve cents for women. The state makes the same contribution in this class as in the case of the compulsory division.

The Post office contributor pays respectively about eight cents per week for men and six cents for women, the share of the employer and the state being added to a fund which is set aside exclusively for this class, so that benefits can be withdrawn up to the amount of the fund when required. This is practically "assisted thrift," since what the insurer receives he pays for with the joint assistance of the employer and the state.

A sliding scale of premiums is provided to cover different ages and earning capacities, as in any ordinary insurance plan, the total income per week per person, however, remaining the same, the differential in the premiums falling upon either employé, em-

ployer or state, as shown in the following table for men over twenty-one years of age.

	Rate of contribution per week.			
	Employer	Contributor	State	Total
Wage per working day.				
Not exceeding 36c	12c	0c	2c	14c
Not exceeding 48c	10c	2c	2c	14c
Not exceeding 60c	8c	6c	0c	14c
Exceeding 60c	6c	8c	0c	14c

The act necessarily contains a great many exceptions on account of its wide scope and the complex conditions under which it operates, but, generally speaking, the above figures will give an idea of the cost to each of the contributing factors.

Weekly premium cards are issued by the government to contributors and employers, and subscriptions are paid by means of ordinary postage stamps affixed thereto as specified. These cards are collected either by the approved societies or the agents of the government or otherwise deposited in the local postoffice, according to the class and location of the insured.

The premium of the compulsory contributors are deducted from their wages when paid through the employer, but many liberal and progressive employers are paying not only their own share, but also that of their employés, thereby in such instances carrying the double burden of their workmen's insurance.

Without doubt the most vital part of the act and that portion which will appeal most strongly to the interest and sympathy of the medical profession is contained in what may be not inaptly termed its beneficent features. These benefits may be classified as, Medical, Sanatoria, Sickness, Disablement and Maternity.

The Medical benefit provides for the free services of a doctor, medicines, etc., to all insured persons, on demand. Such provision constitutes a definite and almost inestimable forward movement towards the physical uplifting of the wage earners, for



it brings that element of the population into contact with the medical profession which has most need of hygienic education and medical care.

The act has created Panels or Districts in the various sections where approved societies are active or in so-called insured localities, and local physicians and surgeons have been appointed by the government under the act, to serve within the designated limits of such panels. The fee first allowed under the act for these services (including office and house calls only and not hospital practice), was approximately \$1.50 per annum for each insured person. Panels range in number from 1,000 to 2,500 insurable persons, thus assuring the physician an income of \$1,500 to \$3,000 per annum for this work alone, and since the family of an insured man or woman is not included, the doctor on the panel is reasonably certain of obtaining this practice also.

Since reliable statistics are available showing that the average sickness in a community is not likely to exceed 20 per cent. of its population, this would appear to be reasonably satisfactory compensation for the class of work required.

When the plan was first submitted to the medical profession of Great Britain its reception was not as cordial as the author of the act had anticipated. It was contended in the main that the act had been compiled without any consultation with medical authorities, and that the fee allowed was inadequate for the services required. The pertinent reply to the argument was the well known fact that Friendly Societies' physicians received only 60c to 70c per annum for each insured person, also that the numbers thus insured were immeasurably smaller than would be the case under the new act.

At this stage the British Medical Association, undeniably influenced by the political opponents of the measure, and after much recriminatory discussion, advised its

members to refrain from service under the act. Despite this attitude the government decided to pursue an independent course, and proceeded to appoint such physicians as signified their willingness to accept the terms imposed. This included a large number of the members of the association, whose welfare was otherwise vitally jeopardized; which combination of circumstances ultimately brought about reconsideration and amicable adjustment between the Government and the Medical Association, whereby a per capita fee of \$2.50 per annum was adopted, exclusive of medicines and supplies.

Appointments of so-called "panel doctors" are made by the government from approved applications of resident physicians in any insured district, from which number the contributors have the privilege of making a selection, but each individual, expressing a personal preference for any physician not regularly appointed on the panel, will be allowed to receive such service, providing the statutory fee is accepted by the physician as full compensation for a year's professional liability.

Similarly certain drug stores have been designated by the government to supply all medicines and appliances to insured persons on the prescription of the panel physician.

Thus it is hoped that under the provisions of the act, the poor man may receive the best medical care and advice obtainable, and the purest drugs that can be secured.

Sanatoria benefits provide for the treatment in a sanatorium for the tuberculous, or in other institutions for such diseases as the insurance committee of each district may designate under the advice of the panel physician. Tuberculosis is treated in sanatoria, in tents and shelters, also through dispensaries or in the home, depending upon the severity of the case. This branch of the work will be extended in the

near future to include cancer and syphilis. The doctor on the panel is not required to treat chronic conditions such as tuberculosis or acute diseases of long duration, but can refer them to sanatoria or hospitals, upon diagnosis.

The right of the insured to medical benefit and sanatoria treatment does not cease at the age of seventy years and therefore in time, will dispense with the necessity of recourse to the Poor law guardians for old age pensioners. Certain sums of money are being annually laid aside for the erection of tuberculosis sanatoria, for the use of contributors under the act, but in the meantime temporary houses and hospitals are meeting the demand.

Sickness benefit is defined as periodical payments whilst the contributor is rendered incapable of work by some specific disease or mental disablement, of which notice has been given, commencing from the fourth day after becoming incapacitated and continuing for a period not exceeding twenty-six weeks. A doctor's certificate is necessary as a proof of such incapacity.

Generally speaking, this benefit requires the insurer to reside within the United Kingdom) and twenty-six weekly contributions must have been paid before any benefit is allowed. The ordinary rate of sick benefit is \$2.50 a week for a period of twenty-six weeks for men and \$1.75 a week for twenty-six weeks for women. Sickness benefit ceases at the age of seventy years. This provision has also a sliding scale of payments depending upon the age and station in life and whether married or single, etc.

Disablement benefit operates in case the disease or disablement continues after the cessation of sickness benefit, periodical payments being made so long as the insurer is totally incapacitated. The allowance is fixed at \$1.25 a week for males and \$1 a week for unmarried women. Two years must elapse after the entry into insurance

before this benefit can be obtained and at least 104 weekly contributions must have been made. This right ceases at the age of seventy years, when the old age pension becomes operative.

Maternity benefit provides for payment of the sum of \$7.50 in the case of the confinement of the wife of a member; or where the child is a posthumous child; or the widow of an insured person who is not herself insured; or any other woman who is an insured person.

This payment is made to cover the expense of a doctor or midwife and nurse during the confinement. In Great Britain the average fee for confinement in normal cases is very much less than in the United States, hence the absurdly small amount allowed for maternity benefit. Panel doctors are not required to conduct confinements.

In case of an insured married woman, the sickness benefit is in force for four weeks after the confinement, but this does not hold good for an unmarried insured woman unless her sickness is due to some cause distinct from the confinement.

Probably 75 per cent. of the confinements in the wage earning class are conducted by midwives, and it is left to the discretion of the approved society to which the insurer belongs as to whether the maternity benefit of \$7.50 is paid to the mother or disbursed by the society.

The five benefits before enumerated are now in force and it is the object of the government to increase the benefits as or when the funds available for the purposes of the act shall permit, in order that there may be provided:

(1) Medical treatment and attendance for any person dependent upon the labor of a member.

(2) Payment of the cost of dental treatment.

(3) An increase in sickness and disablement benefit.

(4) An increase in maternity benefit.

(5) Allowance to members during convalescence.

(6) Building of premises suitable for convalescents.

(7) Payments to members who are in want or distress, including remission of arrears whenever such may have become due.

From the foregoing provisions it will be readily seen that an enormous amount of practical assistance is already being extended to the wage earners and deserving poor of the United Kingdom, by the passage of this complicated, beneficent and daring act.

The management is vested in an Insurance Commission of six members which constitutes the central authority, directing and controlling the workings of the act in accordance with the tables, orders and special orders therein contained, and responsible only to Parliament for its administration. The Commission also forms practically a court of final resort and is fully empowered to formulate and enforce such special regulations as may be found necessary or desirable, thus upon the capability and breadth of character of its members, depends largely the success or failure of the measure.

Advisory committees and inspectors are selected from Associations of employers, approved societies and duly qualified medical men. Inspectors have the power to investigate all insured workshops, examine books, cards and documents, including physicians' records, and to enforce compliance with the orders of the act in case of need, since being based on the principle of compulsion it must fail unless stringent means are employed for carrying its provisions into effect.

Insurance committees are established in all of the sixty-two administrative counties and seventy-five county boroughs, the number in each committee being regulated by the number of insured persons in such area, with a maximum of eighty members and a

minimum of forty members for each committee. A proportionate number of physicians must be members of these committees and it is the duty of this branch of the administrative force to manage and oversee all matters pertaining to the act in the particular area under its jurisdiction.

Each insurance committee appoints district committees to supervise those sparsely populated rural districts where approved societies do not exist, such district committees being required to report at stated intervals to the appointive insurance committee.

It is thus obvious that an intricate and scientific system of management is essential to the proper conduct of the work, and the perfection of its organization.

The financial provision necessary to be made for carrying on the work of the act becomes startling when it is known that an estimated deficit of \$350,000,000 will be created in the national accounts by the enactment of this bill, but the deduction has been made from carefully calculated statistics that the income based upon the uniform rates previously given in this review, together with the tapping of various sources of unearned wealth, such as entailed land holdings (which hitherto have not been adequately taxed), a period of eighteen and one-fourth years only will be required to defray this debt.

The National Insurance act deals not only with insurance against sickness and disablement, but also provides insurance against unemployment, thus enabling a working man or woman contributor to receive adequate and proportionate compensation for a definite number of weeks, when unavoidably idle.

The basic principle underlying the British National Insurance Act may be briefly expressed as one of benevolent compulsion combined with equalized privileges, and in order to render it immediately effective all persons between the ages of sixteen and six-



ty-five years, coming within the scope of its provisions, must be enrolled in its panels, within one year from the date of its completed organization, as determined by the commission.

Sincerity and honesty of purpose on the part of its author are indicated by the more liberal settlement finally made with the British Medical Association and also by the generous terms granted the existing Friendly Societies, under which they were permitted to retain and disburse pro rata to their members, their accumulated reserve funds, the government thereby recognizing the excellent work which they had voluntarily done, and securing in return their good will and co-operation in the passage and initiation of the new act.

By reason of the liberality of its sentiment and terms it is no exaggeration to say that there is scarcely a home, factory or workshop in the United Kingdom in which the beneficial effects of this act will not be felt. In innumerable heretofore neglected homes will be realized the inestimable boon of skilled medical attention and advice in time of need, and when the breadwinner is incapacitated, the sting of such misfortune will be at least softened, since the modest income necessary for maintenance will not cease, because of the protecting shield of this humane legislation, which aims to bring to the humblest citizens the blessing of a healthy body and a sound mind.

The possible adverse influence of the act upon the financial welfare of existing hospitals and other charitable institutions heretofore supported by voluntary efforts, now that an enforced medical tax has been placed upon their contributors, is a contingency for which the state will undoubtedly be called upon to provide, and in all probability will be met by the government assuming the management and regulation of such charitable institutions as part of the national insurance program.

The far-reaching and practical effort now being made by the English nation for the advancement of the health conditions of its working population, should appeal strongly to all thoughtful American citizens, regardless of personal or political affiliations, and to none more than the medical profession in this country, to many of whose members the pressing need for concerted action is daily evidenced.

Is it too much to hope that for the United States in the not distant future, a leader may arise, possessed of the imagination to conceive and the genius to conduct a nation-wide campaign against sickness and its attendant economic disabilities?

An enlightened public intelligence would doubtless welcome a comprehensive plan for federal control of selected hospitals and sanatoria in all the principal centers of population, to be served by a competent body of physicians and surgeons, who should form a distinct entity in our national life, organizing a great corps of medical men to whose devoted care and scientific skill would be entrusted in large measure the responsibility for the physical welfare of the nation. Such a plan would involve the appointment or election of a central governing board of management comprising the leading members of the medical profession, comparable only to the Army and Navy in the extent and importance of its duties in the supervision and encouragement of every department of medical activity throughout the country, the presiding officer of which board might appropriately and with advantage be given a seat in the council of the nation's President.

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#### Sure Sign.

One day a teacher was having a first-grade class in physiology. She asked them if they knew that there was a burning fire in the body all of the time. One little girl spoke up and said:

"Yes'm, when it is a cold day I can see the smoke."—National Monthly.

## DIAGNOSIS OF PANCREATIC EFFICIENCY.

J. L. MORTIMER, M. D.,  
DENVER, COLO.

The diagnosis of pancreas disturbance is as a rule more or less difficult. That is due to the absence of definite symptoms in even advanced pancreatic disease, and furthermore, the findings do not necessarily point to the pancreas as the only seat of disease. The result being that one seldom succeeds in recognizing with certainty disturbances of the pancreas.

It has been the aim of many scientists to fill this gap with valuable knowledge. The functions of the healthy pancreas have long been revealed by the teaching of Claude Bernard, Pawlow and Conheim. The pancreas is of the utmost importance for digestion. It manufactures an active secretion that splits fat, proteids and carbohydrates, and prepares them for absorption.

Pathology and animal experimentation have taught us that with the extirpation of the entire pancreas, a marked disturbance of intestinal digestion, especially of fats and proteids is produced. The degree of interference with pancreatic function by removal of small parts has not as yet been proven with certainty.

### *The Disturbance of Fat Absorption by the Absence of Pancreatic Juice and by Pancreatic Diseases.*

Claude Bernard found that the splitting of fats was impaired in dogs whose ducts were destroyed.

Abelman<sup>1</sup> extirpated the entire pancreas of dogs. These animals absorbed none of the non-emulsified, and 18.5% of the emulsified fat. A natural emulsion in the form of milk was absorbed best.

Oser<sup>2</sup> found in a case of carcinoma involving the head of the pancreas, 46% of the fat intake in the dried stool.

Friedrich Müller<sup>3</sup> in numerous observations found that 39.8% of fats was split instead of 84.3% in diseases of the pancreas or occlusion of the duct of Wirsung.

The investigations of Brugsch<sup>4</sup> show that in pancreatic disease with slight icterus the loss of fat absorption is 72.2% and with marked icterus 87%. In pancreatic disease without icterus 64.6% and in icterus without pancreatic disease 45%.

### *The Disturbances of Protein Absorption in Pancreatic Disease.*

This manifests itself in the scanty absorption of meat, kreatorrhoë, and increased nitrogen elimination in the feces, azotorrhoe. Abelmann found that only 44% of the proteid intake was absorbed in his pancreas extirpated dogs.

Brugsch found in pancreas disease without icterus, nitrogen loss of 21.2% and in pancreas disease with icterus a nitrogen loss of 33.7%. In icterus without pancreatic involvement, nitrogen loss of only 11%.

### *Carbohydrate Digestion in Pancreatic Disease.*

Friedrich Müller found that neither absence of pancreatic juice nor advanced disease of the pancreas produce any disturbance to carbohydrate digestion.

Ehrmann observed an increase in weight on a carbohydrate diet, in a case of chronic pancreatitis where the fat and proteid assimilation was impaired.

Several scientists have tried to diagnose pancreatic disease by administering substances that are acted upon by the pancreatic juice. If no digestion of these substances took place they concluded that pancreatic disease existed.

Sahli<sup>5</sup> employed the glutoid capsule filled with iodoform which is dissolved by the pancreatic juice, liberating iodoform. The finding of iodine in the urine and saliva proves the intact pancreatic function.

Schmidt's<sup>7</sup> nucleus test: Since the nuclei of animal cells are absorbed only by the pancreas, this led Schmidt to employ silk

gauze bags filled with meat particles. The microscopical examination of these particles after being fished out of the feces is a guide as to the function of the pancreas.

Both of these tests are not-absolutely reliable, since the glutoid capsule may not always be digested even with normal pancreatic juice, and it has also been found that the gastric juice can digest nuclei of meat and in case of achylia gastrica the nuclei digestion may be absent.

Other means were sought that would aid in making a diagnosis of pancreas disease. The ferments were then isolated, the fat-splitting lipase, the proteid-acting trypsin and the starch-acting diastase. Trypsin possessed the property of changing proteids to amino acids. Diastase digests starch substances to maltose and is freely secreted in the lumen of the intestines. The lipase of the pancreatic juice splits fats into fatty acids and glycerin.

*Ferment Diagnosis of Pancreatic Disease.—The Presence of the Pancreas Ferment in the Stomach Content.*

The ferments can be obtained in two ways: from the stomach and from the intestines. Boas<sup>8</sup> was the first who succeeded in obtaining pancreas secretion from the stomach in this manner. After gastric lavage with a 2% soda solution, the patient is massaged over the stomach region for six minutes, then a stomach tube is introduced and 40 to 50 ccm. of a bile-stained fluid removed, in which he found a tryptic and an amyloptic ferment. Boldyreff<sup>9</sup> found that this back flow of duodenal juice is markedly increased when the patient takes 100 to 150 ccm. of olive oil one hour before the stomach content is removed. Volhard<sup>10</sup> found that in only 11% of the cases the trypsin was absent. Levinsky<sup>11</sup> proved that a high acid content of the stomach diminished the amount of ferment obtained. He therefore recommended giving 2 grams of magnesia before the oil test breakfast.

In this way a trypsin containing stomach content can be obtained in all normal cases. Further studies in the laboratory of Prof. H. Strauss of Berlin showed that cream which on account of its better taste can be substituted for the olive oil, of which 200 grams is given, with 0.6 magnesia.

The above methods were employed for the functional tests of pancreatic efficiency, the principle of which is based on the amount of casein of a standard solution digested. It is not always possible to obtain the pancreatic juice, as in mechanical obstruction of the flow from the duodenum to the stomach, tumor of the pylorus, compression, adhesions, etc.

*The Presence of Pancreas Fermentation in the Feces.*

Another way in which pancreas ferments can be derived is by the analysis of feces. The ferments after fulfilling their action do not disappear, but are found in the feces together with the end product produced by their activity. Proteolytic ferments were demonstrated in the feces by Müller, Ury<sup>12</sup>. Diastatic ferments by Jaksch<sup>13</sup>, Strasburger<sup>14</sup> and Wohlgemuth<sup>15</sup>. It is not proved that these proteid-splitting and starch-digesting substances are necessarily derived from the pancreas. The present knowledge of the origin of the ferment found in the feces are the following: That the greater part of the proteolytic ferment is derived from the pancreas and the remainder from the intestines. The amyolytic action is produced by an amyolytic ferment which is derived mostly from the intestine, and the remainder from the pancreas.

*A Method for Demonstrating the Proteolytic Ferment.*

Several methods have been reported for demonstrating pancreas ferments in the feces. The first clinical valuable one was reported by E. Müller<sup>16</sup>, the technique of which is as follows: Small drops of the material to be examined are placed on a Loeff-



fler serum Petri dish which is placed in an incubator at 50°C. for 24 about hours. After that period instead of the drops, small depressions the size of which indicates the strength of the ferment contents. If the ferment is absent no depressions are seen.

The above method does not offer an exact quantitative estimation of the proteolytic ferment in the feces. For this purpose Fuld and Gross<sup>17</sup> have originated a method the principle of which is based on the following facts: That casein in alkaline solution is precipitated by dilute acetic acid, while the products of trypsin digestion do not precipitate. According to the time necessary for casein to be digested by a definite trypsin solution the strength of trypsin containing solution is estimated. The method is as follows: 0.5 gram of pure casein is dissolved in a 0.1% soda solution. One part of the feces to be examined is mixed with three parts of 0.1% soda solution, then rubbed up in a mortar, then filtered. The filtrate serves the purpose of analysis.

*For the Accurate Quantitative Analysis of the Ferment.*

To a series of test tubes each containing 10 ccm. of the 1/2% casein solution, is added increasing quantities of the fecal filtrate. After a definite period (about two hours) in a thermostat at 40° C., several drops of 1% acetic acid is added and the degree of turbidity signifies the quantity of trypsin. The stool may be obtained after a definite diet. Goldschmidt<sup>18</sup> employs the following method: After an enema the patient is given a breakfast consisting of 150 grams of raw scraped beef, a roll and butter. This is followed in two hours by a cathartic. 5 grams of the stool is mixed with 45 ccm. of water. This is a 10% solution. It is then filtered and decreasing amounts (1 ccm., 0.5 ccm., 0.2 ccm., etc.), is placed in test tubes containing 1% casein solution.

Test Tube	I	II	III	IV	V	VI
	ccm.	ccm.	ccm.	ccm.	ccm.	ccm.
Filtrate	1	0.5	0.2	0.1	0.05	0.02
Casein Sol. 1%	10	10	10	10	10	10

If the digestion of casein takes place for example in dilution of 1 to 50 (equals 0.2 ccm. of the stool filtrate) there is a content of 50 trypsin units.

*(b) Method of Determining the Diastatic Ferment.*

Wohlegemuth<sup>15</sup> employs the starch method which is founded on the principle that diastatic containing solutions digest starch, and the resulting products of digestion will not show the characteristic blue coloration on the addition of iodine. Depending upon the diastatic strength, a red coloration will appear (erythrodextrin) or with an absence of coloration (achroodextrin).

Five grams of stool is rubbed with 20 ccm. of 1% NaCl solution. After thirty minutes at room temperature, during which the mixture is shaken several times, then 10 ccm. are poured into each of two centrifugal tubes and centrifuged until a supernatant fluid separates, of which decreasing quantities are placed in a series of test tubes as follows:

Tube	I	II	III	IV	V	VI	VII	VIII	IX
	ccm.	ccm.	ccm.	ccm.	ccm.	ccm.	ccm.	ccm.	ccm.
Ext.	1.0	0.5	0.25	0.12	0.06	0.03	0.015	0.008	0.004

To each tube 5 ccm. of a 1% starch solution is added and then placed in a thermostat at 38° for 24 hours. The tubes are then filled with tap water up to one finger-breadth from the top, and a few drops of 1/10 normal iodine solution is added. The tubes containing undigested starch show a blue color. If erythrodextrin is present a red color will appear, and if digestion of starch is complete no change of color takes place.

To estimate the diastatic strength: If one finds that after the addition of 1/10 normal iodine solution that for example tubes I and II remain unchanged, III and IV colored red, V, VI, VII, VIII and IX

colored blue, then tube IV shows the limit of digestion.

*Value of Above Analysis in Diagnosis.*

The proteolytic ferment remains constantly absent in the feces when there is occlusion of the duct of Wirsung, whether caused by a malignant growth or any other pathologic process in or surrounding the pancreas. In three cases reported by Stan-  
yck<sup>19</sup> and Hirschberg<sup>20</sup> the proteolytic ferment was absent in acute pancreatitis with fat necrosis.

Kaufmann found small quantities of proteolytic ferment in normal stools. Achylia stools show an absence or marked diminution of the proteolytic ferment, but if the fat is extracted with ether, digestion takes place. In diarrhoeic stools there is an increase of ferments, also in organic affections as tuberculous enteritis, cholera nostras, catarrhal enteritis and typhus abdominalis. The diastatic is more stable than the proteolytic ferment, it seems there are stations that produce diastatic ferment outside of the pancreas, as it is never entirely absent in affections of the pancreas.

The diagnostic value of ferment estimation of the stools should be reached critically and carefully.

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**REPORT OF A CASE OF CARCINOMA  
OF THE STOMACH AND  
INTESTINE.\***

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Superintendent and Medical Director of the  
National Jewish Hospital for Consumptives.

Miss E. R., age thirty years, native of Russia, and a resident in the United States five months. Occupation, dressmaker. Family history, negative. Duration of the disease, about six weeks, according to the patient. Cold given as cause. First Symptoms in the course of the disease, as given in the medical history by her physician in the East, cough, hemoptysis, night sweats. There was pain in the chest and shoulders. appetite and digestion poor, bowels regular, healthy looking, tongue slightly coated. Chest form normal, fair nutrition of body and pulse normal. Average weight, 116 pounds, but at the time of this history, 109 pounds.

Physical examination, as stated by her physician, showed involvement of apices of both lungs, anteriorly and posteriorly with

\*Read at a meeting of the Denver County Medical Society, September 16, 1913.

presence of tubercle bacilli in the sputum. Diagnosis made as Pulmonary Tuberculosis in an early stage. Upon this history and examination, the applicant was accepted as a suitable patient for the National Jewish Hospital for Consumptives, and admitted on October 28th, 1912.

Examinations made next day after admission to the hospital showed only a slightly impaired respiratory murmur of the right supraspinous fossa. Examinations made of the lungs on November 29, December 30 and January 20 were negative in findings. Repeated examinations of urine normal, and for tubercle bacilli, negative; likewise sputum examinations on various occasions were found negative. Pirquet skin test proved positive. The chart of temperature from date of admission at no time showed fever.

A few weeks after admission the first complaint was made of loss of appetite, difficulty of digestion and vomiting. A prompt and thorough examination of the abdomen revealed nothing, and attention to dietetic details was followed by improvement in the digestion and lessening of complaining symptoms.

There was nothing unusual until February 23, when the patient went to bed complaining of severe pains in the abdomen. Local applications and enemas gave relief, although there was a slight vomiting of a greenish color. The patient slept well with temperature and pulse normal.

February 24 the patient again vomited, complaining of severe pains in the stomach with nausea; a small amount of mucus was vomited several times. Enemas gave no results.

February 25 a high enema was given, with slight movement of the bowels. The patient was very restless all night, sleeping only about three hours. Severe pains in the abdomen still continued, again with vomiting, greenish in color. Obstruction of the bowels was suspected, and Drs.

Freeman and Kleiner were called in consultation. An operation was advised to relieve the obstruction.

February 27 the patient was operated upon at 5 p. m. by Drs. Freeman and Eichberg. An exploratory incision showed the obstruction to be due to carcinoma of the rectum and ascending and descending colon of a character for which nothing much could be done. An artificial anus was made and the wound was closed. The patient for a brief period rested well after the operation, when pulse and temperature began to rise from  $99\frac{1}{2}$  at 9 p. m. of the day of the operation to  $108\frac{1}{2}$  at 6 p. m. on the following day, one hour before death; the pulse becoming so very rapid it was almost impossible to count it. Death occurred at 7 p. m. on the day following the operation.

*Autopsy Performed by Drs. Beggs, Howe and Lewis.*

LUNGS—Adhesion of right upper lobe anterior and few posterior at base of right. Congestion of right upper lobe with few calcareous nodules. Lower lobe congested. Left upper and lower lobes congested with very little air.

HEART—Slight congestion of right ventricle. Left ventricle slightly friable. Fatty liver, both kidneys normal, acute swelling of spleen, appendix normal, pancreas normal, brain normal. Enlarged mesenteric glands, posterior to stomach, contracted stomach with numerous cancerous nodules, cancerous mass of rectum ascending and descending colon.

There was no evidence of tuberculosis present anywhere in the body.

This case is reported mainly because of the mistakes made in a diagnosis, and because it teaches a valuable lesson, which should be strongly impressed upon those who come constantly in contact with tubercular patients.

There is today a not uncommon occurrence of too-ready a diagnosis of tuber-



eulosis; the overlooking of concurrent symptoms, which may be the result of some other disease and of greater importance and seriousness than the tuberculosis. All tubercular patients should be examined thoroughly for possible complications, and we should not be too prompt to accept a diagnosis of tuberculosis unless we have positive proof of its existence. Skin tests are not conclusive, and mistakes are made in reporting positive examinations of sputums which are often due either to carelessness in making the examination, having unclean slides, etc., or non-recognition of the true tubercular germ. Cough, hemoptysis or even some change in the normal signs on physical examination of the lungs does not necessarily mean that we have tuberculosis to deal with. When in doubt, an X-ray picture of the lungs should be taken, to aid in making a certain diagnosis.

Diagnosis of cancer is not an easy one to make in its incipency, and its recognition is sometimes overlooked in a well-defined case of this character, as was done in this instance.

Osler, in his text-book, states that the onset of cancer may be entirely unnoticed either by patient or physician; that the patient may even enjoy apparent health for months, with undisturbed appetite and digestion and with maintenance of strength and nutrition even when extensive metastases are present, that the absence of tumor and gastric symptoms is common in such patients. He also refers to one of these instances: A woman, who developed the first sign of indisposition five weeks before her death. The earliest symptom was a sudden pain in the right side of the abdomen, which came on while she was hard at work and apparently in good health.

Reed states that gastric catarrh is usually one of the first symptoms of cancer of the stomach. Both Reed and Osler, however, as well as other writers on the subject, warn us that we may suspect

carcinoma in a patient of middle age or beyond, who has not previously suffered with indigestion, who begins to complain of a slight discomfort after eating, falling off in appetite and loss of strength, when these symptoms persist and become gradually worse, in spite of appropriate treatment. As these same symptoms are present in tuberculosis, one can understand how easy it is to err in diagnosis, unless the physician is on his guard and considers the possibility of complications and the presence of some other disease.

Dr. Burdick, our Laboratory Assistant, has kindly arranged some specimens.—the stomach, rectum and some of the intestinal and glandular tissues, for your inspection.

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#### FIRST AID PACKET.

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A first aid packet for miners' use is described and illustrated by W. V. Gage, primero, Colo., (Journal A. M. A., September 6), which he has devised to insure its ready availability in case of underground injury. A miner might carry one in his pocket but it would be probably found out side in case of an emergency if its carriage was left to the average miner. The packet as devised, is made of tin, eight inches long by three wide and curved on itself laterally to fit the side of the dinner pail. It may carry such first-aid material as is especially demanded. It is one-half inch thick and its sides are soft soldered at their edges to a half-inch tin strip and the package is sealed hermetically. The narrow strip is of such a length as to allow its ends to lap over each other for about an inch, leaving a tongue which is seized when the strip is to be torn off to open the packet, and the sides of the packet after it is opened can be utilized for splints. This packet is soldered to three places on the dinner pail in its lower portion and this soldering closes three perforations in the sides of the bucket at the point where the fluid portion of the lunch is contained, so that when a packet is lost or removed a new one will have to be obtained.

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#### GOOD FOR FUEL.

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A. A. Wheeler of Mitchell, S. D., found himself six miles from home in a Studebaker car with an empty gasoline tank. He ran to, the next house on gas from his motor primer, and got a bottle of patent medicine which carried him two miles to a supply of kerosene on which he completed the trip into town, he declares.—Motor Age.

# The Colorado State Medical Society

## FORTY-THIRD ANNUAL CONVENTION

### PROCEEDINGS AT GENERAL SESSION

Thursday, October 9, 1913.

Secretary Black moved that the society extend its thanks to the Hotel Colorado for its very excellent method of taking care of the society; also to Dr. W. W. Crook, chairman of the Committee on Arrangements; also to the Garfield County Medical Society for the splendid treatment received by the society during the 43d annual meeting at Glenwood Springs.

This motion was carried unanimously.

Secretary Black presented his report to the society, as follows:

#### Report of the Proceedings of the House of Delegates to the 43d General Session of the Colorado State Medical Society.

On the evening of October 6th there was a short meeting held, at which the only business transacted was the election of a nominating committee composed of:

D. H. A. Black, Pueblo, Chairman.

H. R. McGraw, Denver.

Gerald B. Webb, Colorado Springs.

Geo. E. Von der Schow, Fowler.

H. C. Dodge, Steamboat Springs.

At the regular meeting Tuesday morning an adjournment was taken until afternoon in order to give the Committee on Credentials an opportunity to report. At the adjourned session in the afternoon the reports of officers and standing committees were read and referred to reference committees for further consideration.

The Secretary's report shows the membership to be 781 and that the number of re-instatements was less than ever before in the history of the society. This was occasioned by the more efficient method of collecting dues by our constituent societies during the first two months of each year. The report of the Treasurer shows that he had a balance on hand last year of \$2,089.06, and that he received from all sources during the year \$2,880.68, making a total on hand of \$4,969.74. During the year he paid out \$2,585.27, leaving a cash balance on hand of \$2,384.47. The gain in receipts over expenditures is \$295.41; \$61.23 of this was earned by our Treasurer through interest on moneys deposited in International Trust Company.

During the year a new society has been organized by five physicians of Crowley county. Their application to become a constituent society of this organization was recognized by the House of Delegates and they were granted a charter, which was handed to D. Crum Epler of Pueblo, who had been delegated to represent them.

Dr. Sharpley of Denver was voted thanks for his work done in the last session of the State Legislature and the Secretary ordered to draw

up a memorial in proper form and present it to Dr. Sharpley.

Dr. Lewis L. McArthur of Chicago and Dr. Emil H. Beckman of Rochester, Minn., were elected to honorary membership.

At the meeting of the House on Wednesday the report of the Committee on Necrology reported upon the loss the society has sustained through the death of members. Dr. J. M. Blain, our former secretary, after several years of partial disability, died among friends in Virginia. Dr. Blaine's work during the re-organization of this society and its constituent societies under the plan recommended by the A. M. A. was especially commended and his untimely death deplored. The death of Dr. Arnold Steadman of Denver, one of the organizers of this society in the early seventies was commented upon as well as our beloved fellows at Colorado Springs, namely Drs. Scully and Gildea.

A committee from the Colorado State Pharmaceutical Association, consisting of Mr. De Sheverell of Denver and Mr. Taylor of Pueblo, presented their credentials and expressed a desire for more full relations between our associations and a desire on their part to assist the physicians in every way possible and that we would co-operate with them in their desire for legislation which would more fully protect the public against adulterated and poisonous drugs, which are now being dispensed at the corner grocery. We appointed a committee to confer with them and their conference resulted in a recommendation being adopted that the incoming president appoint a committee of three to confer with a similar committee to be appointed by the pharmaceutical association. A resolution was adopted protesting against the early date arranged for the meeting of the A. M. A. at Atlantic City in June of next year. It is now set so early that our members can not leave here after the first of June and attend the meeting. This would cause us to start before June 1st and there therefore not enable us to secure the reduced summer rate on the railroads.

At the last meeting of the House of Delegates held Thursday morning the following officers were elected:

President, O. M. Gilbert, Boulder.

First Vice President, W. H. Crook, Glenwood Springs.

Second Vice President, Geo. A. Boyd, Colorado Springs.

Third Vice President, A. R. Scott, Strong, Colorado.

Fourth Vice President, R. W. Arndt, Denver.

Board of Councilors—Second District, J. W. Ames, Denver; Third District, E. A. Elder, Pueblo.

Delegate to A. M. A., L. H. McKinnie, Colo-

rado Springs. Alternate, O. D. Wescott, Denver.

Publication Committee, J. A. Markley, Denver.

Meeting Place, Boulder.

The recommendations of the Nominating Committee were adopted that the editor of Colorado Medicine be selected outside the Committee on Publication and that the meetings be held in Denver more frequently because of its clinical advantage.

The prize of \$100 for a prize essay based on original research was continued, and it is hoped that a more spirited competition for it will take place next year and that the competitors will send in their papers early to the Committee on Award so that all papers may be considered for the program at our next annual meeting.

A very important amendment was made to the by-laws, making it impossible for us to seat any one in the House of Delegates who has not been regularly elected a delegate or a first or second alternate. Under no circumstances will a delegate by proxy be seated. The number of members and guests registered at this meeting is 132.

MELVILLE BLACK,  
Secretary.

W. A. Jayne moved that it was the sense of the society that \$300, in addition to the amount heretofore annually expended for and now appropriated for "Colorado Medicine," or such part of said \$300 as may be needed, be at the disposition of the Publication Committee.

This motion carried without dissent.

On motion, duly seconded, Secretary Black's report was unanimously adopted.

On motion of Dr. Miel, the society voted its thanks to the retiring officers, including president, vice presidents and those who have served on committees.

**PRESIDENT BLACK:** Before installing the new officers I wish to express to Dr. Jayne, my predecessor, and to Secretary Black and Treasurer Miel, and other members of this society, my thanks and gratitude for the courtesy and the help which they have given me during my term of office.

It now devolves upon me to introduce to you our new president, Dr. Gilbert. Dr. Gilbert, as I understand, is an old practicing physician, has lived in the city of Boulder for fourteen years. He is Professor of Internal Medicine in the State University. He is a Missourian, as I understand, by birth, which adds much to his worth. He has behind him the support of the Boulder County Society, and comes to us highly recommended, and is a man of wide reputation.

On assuming the chair Dr. Gilbert said:

Mr. Retiring President, members of the Colorado State Medical Society: I wish to thank you most heartily for the honor you have conferred upon me, and I wish further to state that I shall regard this as an empty honor unless I am able in the year which is to follow to add something to the welfare of this society. I shall endeavor to broaden the scope of the work of the society in every respect possible,

and invite the hearty co-operation and suggestions of the members of the society. We shall know no factions. If there have been differences of opinion heretofore, the past in that respect shall be forgotten, and in distributing what little of patronage there may be there shall be no distinction between those who have been with us and those who have seen fit to differ from us.

If it is appropriate, I wish at this time to invite all to the meeting at Boulder next year, as we shall try to make that one of the most enthusiastic and influential meetings that the society has ever had. We have already set our hearts upon making it the banner meeting in attendance of the society.

The meeting will now adjourn to meet in Boulder next September.

#### MEETING OF THE HOUSE OF DELEGATES, GLENWOOD SPRINGS, COLORADO.

Monday, October 6, 1913.

The meeting was called to order by President Black.

Dr. Crum Epler was appointed secretary pro tempore.

There were seventeen members represented, both in person and by proxy.

It was moved, seconded and carried that owing to the absence of the records that all business be suspended that shall come before this meeting except selecting a nominating committee, as required by constitution at first meeting.

H. A. Black, Pueblo.

H. R. McGraw, Denver.

H. C. Dodge, Routt.

G. E. Van Der Scoew, Otero.

G. B. Webb, El Paso.

Moved and carried the nominations be closed. So ordered.

Moved and seconded the secretary cast the ballot for the five mentioned.

Adjourned until 8:30 a. m., October 7, 1913.

CRUM EPLER,  
Sec'y. Pro Tem.

#### MEETING OF THE HOUSE OF DELEGATES, Glenwood Springs, Colorado.

Tuesday, October 7, 1913, 8:30 A. M.

The meeting was called to order by President Black.

Secretary Black announced that in the absence of some of the members of the Committee on Credentials it would be necessary to appoint two members to fill the places of the two absent; the chair having a right to appoint them, this would be done in case there were no objection.

Dr. King moved that the chair appoint two members on the Committee on Credentials.

This motion was seconded, and upon being put to vote was unanimously carried.

President Black appointed Dr. A. T. King of Pueblo county and Dr. P. G. Lester of Huerfano county as temporary members of the committee, in addition to the one member present.



Dr. McGraw, in order to give this Credential Committee time to act, moved an adjournment until 4:30 o'clock this afternoon.

This motion was seconded and upon being put to vote was unanimously carried, and the meeting was adjourned until 4:30 o'clock p. m.

#### MEETING OF THE HOUSE OF DELEGATES,

Glenwood Springs, Colorado,

Tuesday, October 7, 1913, 4:30 P. M.

The meeting was called to order by President Black.

President Black announced that the Committee on Credentials have ruled, for this particular meeting at least, that a proxy given by a delegate to another, whether the delegate be for his own society or from another society, is to take precedence over the appointment by the president of the local society of the delegate to act as proxy. In other words, a direct proxy from the delegate is to take precedence over the appointment by the president.

The secretary called the roll and announced that thirty-four out of a possible forty-six were present, constituting more than a quorum.

Dr. Cooper presented the following:

"I, Edwin Bacon, do hereby appoint Dr. J. B. Davis to act as my proxy at the meeting of the State Medical Society, held at Glenwood Springs, Colorado, October 7, 8 and 9, 1913, and authorize him to exercise whatever power I may possess as a delegate to the society at this meeting."

This proxy was duly referred to the Committee on Credentials.

Business was temporarily suspended to enable the Committee on Credentials to pass upon this proxy.

The Committee on Credentials then reported as follows:

That the credentials of Dr. Booth, having been received and having been accepted, he has been seated as a member of the House of Delegates. The roll has been called. He has responded to his name as a member of the House of Delegates and can only be unseated by the House of Delegates.

Dr. H. A. Black asked for a ruling from the chair whether a delegate could represent more than one county.

President Black ruled that no delegate could cast more than one vote in the House of Delegates.

Dr. Cooper appealed from the decision of the chair, and the chair was sustained by a vote of 19 to 11.

The minutes of the meetings of the House of Delegates for 1912, held in the city of Pueblo on September 23, 24 and 25, having been printed in full in the issue of Colorado Medicine for October, 1912, were duly approved.

Minutes of meeting held October 6, 1913, at the Hotel Colorado, Glenwood Springs, were read and approved without dissent.

Dr. Hubert Work presented his report as delegate to the American Medical Association.

Dr. W. W. Grant spoke, supplementing Dr. Work's report.

To the House of Delegates,

Colorado State Medical Society.

Gentlemen:—As your senior representative in the House of Delegates of the American Medical Association, I am pleased to comply with the custom which requires a brief report of the annual meeting.

The University of Minnesota had placed before the Association the use of its many magnificent buildings, so that the accommodations were ample and well adapted to section work and display exhibits, which surpassed those of any previous meeting.

It is not possible for your delegates to attend scientific sessions without neglecting duties you send them to perform, but I learned that the section work was of the most advanced character and participation in it enthusiastic.

The refinements of special work have placed many of the papers quite out of the ordinary practitioner's reach and their discussion seems a foreign language to many of us, yet the demand for simplification of technical language is already in evidence and may be confidently expected.

Papers were presented by men who had operated 1,000 cases of cancer of the stomach. Surgery of the thyroid, 5,000 operations. Posterior gastro-enterostomy in acute perforated ulcer of the duodenum, with a report of thirty cases.

Anaphylaxis in diagnosis of cancer.

Gastric tetany.

Technic of Roentgenoscopy of the gastrointestinal tract.

The care of nursing infants illustrated by the cinematograph, showing the dirty dairy, the ignorant mother and the changes following the dairy inspector and the nursing's hospital.

Exhibits showing:

(a) Blood changes caused in animals by the administration of human cancer protein.

(b) The preparation of anti-cancer globulins.

(c) Exhibit of rare tumors,

by one of the younger Vaughans of Michigan. Another showing management of the various intestinal parasitic diseases, prepared by Dr. Lillian H. South of Kentucky.

Photographic illustration of sanitary privy vaults being installed in the mountain districts of Kentucky; of hookworm victims before and after treatment, together with microscopic history of the hookworm, which were exhibited by the younger Dr. McCormack of Kentucky, would alone fix a place in history for preventive medicine.

An exhibit showing cultivation of Malaria Plasmodia in vitro by Dr. Bass of New Orleans, with scores of others, indicating that every device of science seems to have been injected into the practice of medicine. The more than 400 papers presented to the fifteen sections of the Association show a reliance upon scientific foundation inconceivable twenty-five years ago.

The House of Delegates unqualifiedly condemned the secret splitting of fees, endorsed the proposition that all members of constituent societies shall be ipso facto members of the American Medical Association, and that all

members who subscribe for the Journal and take interest in the scientific work of the Association shall be designated as Fellows. All Fellows of the Association must be members, but all members need not become Fellows to retain membership.

The House also ruled that no section should permit the reading of more than thirty papers and no author may read papers in more than one section, for the reason that the Journal cannot now print all the papers presented during the year. The weekly periodical of the American Medical Association, already the greatest journal of American medicine, will be a medical education in itself through the reproduction of the papers read at the late meeting.

The subscribers to the Journal have increased from 4,633 in 1900 to 19,863 in 1913. The membership of the Association increased 3,630 during the year. The whole number of members in the United States May 1st, 1913, was 36,000. Under the new ruling of the House the present membership is more than 70,000.

Much complaint is heard from physicians of diminishing incomes and of the prosperity of the fakirs in medicine.

This is an era of new methods in medicine and patronage does seem to go to the man with something new, rather than continue indefinitely with the physician using the methods of twenty-five year ago.

Regular medicine must now appeal to the public through successes with diseased conditions that do not themselves tend to recovery. Doctors must cure the sick and lawyers must win cases, for we are no longer regarded merely as respectable persons to stand by as friends in trouble, but we are hired to do good work.

If it becomes true, as prophesied, that the physicians of the future will be guardians of health rather than "cures" for disease, will be biologists rather than pathologists, and the pharmacists of the future will be trained physicians specializing in laboratory work rather than biologic analyses—a period of readjustment is pending for which the profession must prepare. Indeed, the American Medical Association is unconsciously tending to just such a consummation. The energies of its membership are being diverted into these two directions; very evident through the Association because it is a sensitized body reflecting the scientific mind of the profession as no other medical organization can.

The practice of medicine, like many other essentials to the world's welfare, seems ready for a change, and we may as well lend ourselves to it, for men are made by their times more than they make their times.

The development of medicine has put practice, in its entirety, beyond the compass of one man. It has already been divided and subdivided into specialties until community teamwork has become a business necessity, lest the general practitioner become a medical finger board, directing patients where to go, but unable to go with them. These observations may seem foreign to the functions of a report, but

unless we give passing heed to the business features of our profession we must perish scientifically, and this subject seems worthy of notice, though not entitled to become a feature of program consideration.

The American Medical Association is prosperous financially and its Trustees are trying to devise methods by which its constituent societies may share in it, through support to the state journals particularly.

Why there should be any opposition to the American Medical Association can be explained only by the facts that it is a laboratory where medical men and their professional accomplishments are analyzed and the worthless exposed, and that it fearlessly attacks the pretender through its Journal. However, these facts have fixed the Association in the public mind as the representative of a profession in America which has made the United States a center for post-graduate work, attractive to Europeans.

The patent medicine traffic, with its associated quackery, are better understood now than ever before, both in the United States and abroad, because of the changed attitude of the lay press towards ethical medicine, a direct result of the Journal's teachings.

The British government has asked the Association to send data on the nostrum evil for use of its committee from the British parliament. Later the British Consulate sent for a duplication of the matter for transmission by the British Embassy to the government of South Africa. Western Australia has also ordered the same data. Ten thousand copies of the Association's book, *Nostrums and Quackery*, have been exhausted in less than a year and 700 pages have been added to the second edition, just out.

There has never been a time when the breach between scientific medicine and its imitation was so apparent as now, nor a time offering greater encouragement to the student-physician who is intellectually, scientifically and morally honest.

All indications point to the extinction of the "tradesmen" in practice, with a recognition of scientific medicine never before accorded to it. A man may know medicine without being able to practice it, but he can no longer practice medicine without first knowing it.

History never repeats itself exactly. A certain factor may reappear, but the analogy to former conditions is not close. We will not again see physicians arise de-novo and be licensed because of certain years in practice, or live because the field was large enough for all competitors.

The prime cause in America of this new era in medicine is the American Medical Association, of which our society is an effective component part. Members of this society who do not attend the annual meetings of the A. M. A. cannot appreciate the enviable place Colorado men have made for themselves among those who represent American Medicine.

At its last session the section on Laryngology, Otology and Rhinology was in charge of our Dr. Levy as chairman, and our secretary,



Dr. Black, was elected to represent this section in the House of Delegates,

The section on Nervous and Mental Diseases was officered by our Drs. Pershing and Moleen as president and secretary, respectively, Dr. Moleen being re-elected. Dr. Gengenbach was elected secretary of the Pediatric section, and Dr. Ely was made chairman of the section on Orthopedic Surgery.

Dr. W. W. Grant was re-elected Trustee to succeed himself. As the new term will complete his fifteen years in this office, further commendation cannot be added.

Dr. Edward Jackson's scheme for post-graduate courses in Ophthalmology, in which he urges immediate post-graduate special work for a degree in preparation for this specialty, rather than wait for the time-honored foundation in general medicine, is being rapidly endorsed by medical men because of the valid reasons urged in its support and the personality of their exponent.

No other state in proportion to its representation has done as much in the American Medical Association as Colorado, and I would earnestly urge more of the bright men in this society to attend these great national councils, for no man in these days can really succeed in medicine except with the endorsement of his profession, and no physician can get it unless he attends meetings of medical men, to absorb and give out what others know and he has himself learned.

Some half-dozen members of this society proposed the promulgation of an Association intended to crystalize the nation-wide sentiment looking to race culture. This organization to be called the American Society for Homiculture. Its purpose being to stimulate a more intelligent parenthood by appeals through the ever popular baby show.

These founders suggest that the County Medical Societies take up this work as constituent members of the State Society, and through it to the American Medical Association, precisely as they are now organized, and that this work shall be done through these three medical bodies, by elected delegates as now, but by those specially selected for this educational work. They propose, in brief, that children of merit in each county of the United States may pass a medical examining board, of its County Medical Society, to a similar committee of the State Society, to later appear before examiners chosen by the American Medical Association.

A system covering contests, scoring cards, statistics and arranging for the educational work, which is, of course, the purpose of this society, has been suggested in detail.

I hope someone may offer to go into this matter with you more fully, for it seems to me its possibilities are unlimited.

And now, members of the House of Delegates, I wish to express to the society, through you, my sincere appreciation of its confidence in continuing me for seven years as one of its representatives. Few, if any, have served their state so long in this capacity, and in return I can only say, I did my best and I thank you.

W. W. GRANT: As representative of the

Board of Trustees of the American Medical Association I desire to say a few things supplementary to what Dr. Work has said. In the matters to which he has spoken, he has done it so well that it is needless for me to revert much to those features of the report..

I have found that the average member of the state societies, and even of the American Medical Association itself, does not read the report of the principal committee of the Association. If the membership would read the reports of the Board of Trustees, the House of Delegates and a few of the committee reports, such as the report of the Committees on Education, on Pharmacy, on Chemistry, the report of the Committee on Public Instruction and Legislation, they would be, I am sure, highly interested and entertained, and without this reading you only know by piecemeal here and there what the Association and your own representatives are doing.

How many of you know that the Board of Trustees is composed of only nine members, and that they have absolute charge of the entire finances of this tremendous Association, and that the House of Delegates is really the business and scientific body of the Association? You do not know what the Association owns in Chicago. It would well repay any member of the Association from any part of the entire country to stop in Chicago a few hours and see that it owns one of the finest printing establishments in the whole world, that it has every facility for the publication of scientific and other matter of interest to the Association, that we have a laboratory of our own in connection with the Association, and an employed secretary, that we have in bonds and in the treasury a hundred thousand dollars today as a surplus, we owe not a dollar, and that we are in every possible way encouraging the scientific work of medicine in this Association, through its different committees and bodies.

No one could go into either of these organizations, the House of Delegates or the Board of Trustees, without feeling that he must make personal sacrifice, that he must sacrifice something even of his own business; no one could but feel that he is going there for a laudable purpose and a noble one, dignifying and promoting in every way every scientific and progressive measure which speaks for the welfare and advancement of medicine. Unless he goes there with those feelings he will simply be a cheap politician or a cipher in the great work which is now going on.

The American Medical Association is admittedly the greatest medical organization, doing the greatest work for mankind, since the history of medicine began. No country can present such a spectacle, and if you would read the report of the trustees you would find much that Dr. Work has alluded to as to what different governments are now doing—for I wrote that report myself, and have for two or three years, though I will not the next, but am directly interested in it—and you will find that the example of this Association is now being emulated and imitated by the scientific



men of Germany, and of England especially, and that we are credited today with owning and conducting the best medical weekly journal in any language. That is conceded both in this country and in the old, and it is because of its high ethical stand, its dignified attitude in behalf of deep, scientific medicine, and its opposition to every known form of quackery and professional dishonesty.

It is, therefore, worth trial, representing the best hopes and aspirations of the profession, this new scheme to which Dr. Work has alluded, and to which he wishes me to refer. Homoculture, the name given to this new activity, largely through a committee originating mainly through our dear friend, Dr. Ames's efforts in Cuba, for they have an organization which can teach us something in this line even in Cuba, in the scientific breeding of children as well as horses, the improvement of the physical condition of the race through child culture and children's exhibitions and shows.

Dr. Ditson of Denver, whom we all know and respect as one of the most accomplished women physicians of the state, has taken quite an active part in this work and has at this time gone East in order to confer with distinguished laymen and citizens outside of the medical profession, as well as in it, who are interested in this important work.

I think when we know the force and the value of heredity, of predisposition to certain diseases, and that the object of this organization is in its truest and best sense essentially humanitarian, that it applies to the homes of physicians as well as to the masses of the people, no man or woman in our profession, and no educated person, or any person who wishes the improvement of the race, can fail to give to these new organizations sympathy and whatever active support may be within the power of such person to render.

The American Medical Association itself is neglecting nothing to improve in every way and advance and encourage every influence of this kind. A paper written by Dr. Ditson, published in the Journal of the Association, was most interesting, with many novel hints—but how many have yet read it?

It is true the process of reform is not always a popular one. It is slow. No numerous body ever yet did anything well. The few men, well selected and specially fitted for their work, are the ones who can lead the vanguard in every good work, and our own state society has, through its endeavor now and in the past, been honored and respected by the American Medical Association as few states have in their delegated representation.

Secretary Black read the names of the reference committees appointed as follows:

Committee to receive reports of officers, Dr. George A. Moleen, chairman; Dr. H. C. Dodge and Dr. J. A. Scannell.

Committee to receive reports of committees, Dr. T. E. Carmody, chairman; G. E. Van Der Schow and Dr. T. A. McIntyre.

Committee on miscellaneous business, Dr. A. T. King, chairman; Dr. W. A. Sedwick and Dr. R. W. Arndt.

Committee on appropriations, Dr. H. W. McLauthlin, chairman; Dr. W. T. H. Baker and Dr. G. B. Webb.

Secretary Black read report of Dr. E. J. A. Rogers of Denver, for the Board of Councillors.

Secretary Black presented and read his annual report.

#### ANNUAL REPORT OF THE SECRETARY.

The following correspondence was received and answered:

Exhibit A. This letter was received from Eugene C. Gehrung, one of the organizers of the society, together with the transactions of the first six meetings of the society. These transactions served to complete our transactions from the very beginning, a full set of which have been found and are now on the shelves of the library of the Medical Society of the City and County of Denver. I wrote Dr. Gehrung, thanking him in the name of the society for his courtesy.

Exhibit B. A letter from Dr. Eleanora S. Everhard, chairman of the Committee for Public Health Education Among Women, of the American Medical Association, asking us to co-operate in the creation of a state committee of a similar kind. I wrote her that I would submit her letter to the House of Delegates at this meeting.

Exhibit C. A letter from the State Commissioner of Insurance, asking that the following letter be read to the House of Delegates at this meeting. (Read letter.)

Exhibit D. Letter from Dr. Chandler of Philadelphia regarding the John Morgan Memorial Fund. After submitting this correspondence to our President, he advised that every society in the state be urged to ask its members to subscribe to this fund. My letter sent to the secretaries of our constituent societies is attached to this correspondence. So far replies have been received from the Pueblo County Society and the Fremont County Medical Society. The Pueblo Society raised \$34.00, Fremont \$5.00, which was sent to me, the same being forwarded to Dr. Chandler, whose receipt is made a part of this correspondence.

Exhibit E. A letter from Dr. Jayne, chairman of the Committee on Prize Essays, reports as follows:

#### Financial Report.

##### RECEIPTS.

From reinstatements for 1912—			
Denver . . . . .	12	\$36.00	
Mesa . . . . .	1	3.00	
Tri-County . . . . .	3	9.00	
Larimer . . . . .	1	3.00	
	17	\$51.00	\$51.00
From dues for 1913—			
Boulder . . . . .	40	\$120.00	
Clear Creek . . . . .	5	15.00	
Crowley . . . . .	5	15.00	
Delta . . . . .	20	60.00	
Denver . . . . .	295	885.00	
El Paso . . . . .	81	243.00	
Fremont . . . . .	22	66.00	
Garfield . . . . .	17	51.00	
Huerfano . . . . .	9	27.00	

lake . . . . .	18	54.00	
Larimer . . . . .	18	54.00	
Las Animas . . . . .	27	81.00	
Montrose . . . . .	12	36.00	
Morgan . . . . .	10	30.00	
Mesa . . . . .	19	57.00	
Northeast Colorado. .	11	33.00	
Otero . . . . .	18	54.00	
Ouray . . . . .	5	15.00	
Pueblo . . . . .	49	147.00	
Prowers . . . . .	12	36.00	
Routt . . . . .	6	18.00	
San Juan . . . . .	4	12.00	
San Luis Valley. . . .	23	69.00	
Tri-County . . . . .	16	48.00	
Teller . . . . .	13	39.00	
Weld . . . . .	26	78.00	
	781	\$2,343.00	\$2,343.00

Received from Colorado Medicine—		
January 26th, 1913, from		
advertising . . . . .	\$ 109.34	
April 21st, 1913, from ad-		
vertising . . . . .	166.14	
August 26th, 1913, from		
advertising . . . . .	149.07	
	\$ 424.55	\$ 424.55

Miscellaneous—		
From exchange for checks		.90
		\$2,819.45

DISBURSEMENTS.

To the Treasurer, Dr.		
G. W. Miel . . . . .	\$2,819.45	
	\$2,819.45	\$2,819.45

MELVILLE BLACK,  
Secretary.

To the President and Fellows of the Colorado State Medical Society. Greeting:  
I take pleasure in offering hereby a copy of the earliest history of this society and hope that it may be acceptable and of use.  
With highest esteem, your ex-fellow member,  
EUGENE C. GEHRUNG, M. D.

Honor Member of St. Louis County Med. Soc., Missouri State Med. Soc., Am. Med. Soc., Honorary Member Southeast Missouri Med. Soc., ex-President St. Louis Obst. and Gyn. Soc., ex-President Southeast Med. Dispensary, ex-Consulting Gynecologist of St. Louis Female Hospital and Baptist Sanitarium, Fellow Amer. Gynec. Soc., Am. El. Therapeutic Soc., Member a l'Etranger Soci  t   d'Obst  trique et de Gyn  cologie, Paris, France, Membre Titulaire Soci  t   d'Electro-Th  r. de France, Founding Member of the Soci  t   P  riodique de Gyn. el d'Obst. Internationale, etc.

December 11th, 1912.

Melville Black, M. D.  
Metropolitan Bldg., Denver, Colorado.  
Dear Dr. Black:—Since the organization of this committee, three and one-half years ago, we have sought to work in co-operation with the State Medical Associations.

The plan which we have had in mind from the beginning, and which seems most logical,

would be to have the work carried on in the counties by Committees for Public Health Education, appointed by the County Society, this work to be supervised by a committee under the State Medical Association, so that counties where work is difficult might receive assistance. Then to have an American Medical Association committee, composed of one member of each state committee. Through this American Medical Association committee interest would be stimulated in those states where no work is being done, and methods found most useful in one state could be made known to all. This plan would avoid duplication of work and would keep the work in the state under the supervision of the State Society, so that all committees might work in co-operation.

In the beginning many states had no Committee for Public Education. There are still several which have no such committee. For this reason state chairmen have been appointed by the American Medical Association Committee, without conference with the State Societies. We wish at the present time so to change the method of appointments that they shall be done with the approval of the officers of the State Societies.

Dr. Eleanor Lawney of your city is at present our chairman for Colorado. Will it be possible for you to appoint her on your State Committee for Public Education, if your society has one, and if not, will it be possible for you to secure the appointment of such a committee, with Dr. Lawney as one of its members? Hereafter appointments under this committee will be made after a conference with your State Secretary, or your State Committee.

We are very anxious to have an organized effort in the state of Colorado which gives promise of permanence and effectiveness.

An early reply will be appreciated.

Very truly yours,

ELEANORA S. EVERHARD,

Chairman Committee for Public Health Education Among Women, American Medical Association.

Denver, August 14, 1913.

To the Physicians of Colorado:

Gentlemen:—Section 21 of the new insurance law provides that "any physician who shall examine an applicant for any insurance company not authorized to do business in this state shall be guilty of a misdemeanor, and, upon conviction, shall be punished by a fine of not less than one hundred dollars nor more than five hundred dollars, or imprisonment in the county jail for not less than thirty days nor more than one year, or both, in the discretion of the court."

It has come to the attention of the State Insurance Department that some Colorado physicians have been examining applicants for insurance in the Postal Life Insurance Company of New York. This company is not licensed in Colorado.

It was permissible for physicians to make these examinations under the old law. How-



ever, we beg to call your attention to the fact that the new law effective July 15, 1913, forbids physicians to examine applicants for insurance in all unlicensed companies.

We feel confident that the physicians of Colorado will be glad to conform to this law. We realize that they are busy men and do not have time to read up on insurance, and for this reason we are seeking to have the point in question brought to their notice.

This section of the law was intended as a protection to the public. If a man who is insured in a licensed company dies, and the company should refuse payment, this department and the courts of the state can assist the widow and orphans in collecting the money. However, if a man who is insured in an unlicensed company dies, and the company should refuse payment, there is no way in which the state of Colorado could assist the beneficiaries in collecting.

We therefore respectfully ask your co-operation in the enforcement of this provision of the law.

Very truly yours,

S. EPSTEEN,

Commissioner of Insurance.

Denver, August 14, 1913.

Dr. Melville Black,

Sec. State Medical Ass'n.,  
Metropolitan Bldg., City.

Dear Sir:—In the new insurance law there is a provision which may be of interest to the physicians of Colorado.

Would it be possible for you to read the enclosed letter at the next meeting of the State Medical Association? We will be grateful to you for any assistance you may give us in making this matter known to the physicians of this state.

We feel confident that the physicians of Colorado are glad to conform to the law of the state, but we realize that they are busy men and do not have time to read up on insurance law. For this reason we are seeking to have the point in question brought to their attention.

Thanking you for any assistance you may give us in this respect.

Very truly yours,

S. EPSTEEN,

Commissioner of Insurance.

Philadelphia, March 30, 1913.

President State Medical Society:

My Dear Doctor:—We have committees appointed as per circular concerning the John Morgan Memorial Committee, but find the work has outgrown such committees. We therefore have determined to ask the President of the State Medical Society to organize committees from the various county societies. Such committees to report to the President of the State Medical Society, to whom they shall be responsible, and the President is requested to report to the Central Committee, through me as chairman.

Wherever formed it has been found a small committee of five or ten have carried on the best work. Will you therefore undertake this work and be one of the participants at the glorious finale when the chief and prominent men of the country will attend, according to their promises. The committees already formed of course are not influenced by this action.

Very sincerely yours,

SWITHIN CHANDLER,

Chairman John Morgan Memorial Committee  
An Appeal for a Monument Commemorating  
John Morgan, Founder of the First Medical  
School in the United States of America.

John Morgan was born in Philadelphia, Pa., in the year 1735. He received his degree of A. B. from the college at Philadelphia, now the University of Pennsylvania, in 1757. He was graduated Doctor of Medicine from the University of Edinburgh, and became a Licentiate of the Royal College of Physicians of London, and later a Fellow of the Royal Society.

During the Revolutionary period Dr. Morgan was director general of the hospitals and physician-in-chief of the American army. He was also a member and secretary of the American Philosophical Society of Philadelphia, and in 1787 a Fellow and afterwards a founder of the College of Physicians of Philadelphia, and later one of its censors.

In 1765 he persuaded the trustees of the College of Philadelphia to organize the first medical school in America, and in this institution he became professor and lectured for three years. He was thus in the fullest sense father of medical education in the United States of America.

Dr. John Morgan died October 15, 1789, and lies buried within St. Peter's church, Philadelphia. No monument marks the place where his remains repose, and it seems now desirable to the Philadelphia Society of the Medical Society of the University of Pennsylvania that the name of John Morgan should be fittingly honored by some appropriate monument.

It is believed that the medical profession in general in the United States, and all who directly or indirectly have owed anything to medical education, will heartily approve of this movement. Much has been done to commemorate the heroes of the war, but to few men does the country owe a heavier debt than to John Morgan, who is certainly the undisputed parent of our first medical school in this country. It is hoped, therefore, that all medical institutions, here and elsewhere, may be in sympathy with this commemorative movement and unite with us in suitably marking the last resting place of John Morgan, and erecting a monument in memory of his great services to the medical profession.

This idea of a memorial monument in some attractive form has been so graciously received and so hopefully considered that there is no doubt of the purpose of this committee being effected. It is therefore with pleasure that we



ask you to consider with favor the appeal for financial aid.

EDGAR FAHS SMITH, M. D.,  
Provost of University of Pennsylvania.  
S. WEIR MITCHELL, M. D.  
WILLIAM OSLER, M. D.  
WILLIAM PEPPER, JR., M. D.  
CLARENCE PAYNE FRANKLIN, M. D.  
SWITHIN CHANDLER, M. D.,

Chairman.

Denver, Colo., September 12th, 1913.

Dear Doctor:—I am authorized by President J. A. Black of our society to lay before you a copy of an appeal for funds for the purposes outlined therein. If your society cares to ask its members to subscribe to this fund you can appoint a committee to take charge of the matter or do it yourself.

Subscriptions can be sent to this office and I will send in the monies received, giving each society and individual credit with their respective donations. No one should be asked to give more than a dollar.

Very sincerely yours,

DR. MELVILLE BLACK,

Secretary Colorado State Medical Society.

Philadelphia, September 13, 1913.

To Dr. Melville Black,  
Secretary.

My Dear Dr. Black:—Thank you kindly for the check from the Pueblo County Medical Society, which I just received. As soon as we are ready, be assured we will let you know and we hope you will send a representative.

Very truly,

SWITHIN CHANDLER,  
Chairman.

Philadelphia, October 1, 1913.

To Dr. Melville Black,  
Secretary.

My Dear Doctor:—Thank you and kindly thank the Fremont County Medical Society for the check of five dollars for John Morgan Memorial. I would have replied immediately but the Pennsylvania State Medical met here last week and I was indeed busy.

Sincerely,

SWITHIN CHANDLER,  
Chairman.

Cañon City, Colo., Sept. 19, 1913.

Dr. Melville Black,  
Denver, Colo.

Dear Doctor Black:—I was authorized by our county society at its last meeting to donate \$5.00 to the fund to erect a monument to John Morgan, founder of the first medical school in America. Accordingly I hand you herewith check for the amount.

Kindly give Fremont county the credit for it and oblige.

Yours truly,

W. T. LITTLE.

September 6th, 1913.

Dr. Melville Black,  
Secretary Colo. State Medical Society.

Dear Doctor:—I am instructed to inform you that the prize offered by the State Society for an original essay will not be awarded for 1913.

The Committee of Award requests me to express its unanimous opinion that a prize for the same amount should be offered by the society next year, under the same or similar conditions. The committee respectfully requests that this matter be presented to the House of Delegates at the coming meeting of the society, with the earnest recommendation of this committee.

Very truly,

W. A. JAYNE,  
Chairman Committee of Award.

Las Cruces, N. Mex., August 31, 1913.

Doctor Melville Black,  
Secretary Colorado State Medical Society.  
Denver, Colo.

My Dear Doctor:—Doctor J. W. Colbert of Albuquerque, New Mexico, has been named as fraternal delegate on the part of the New Mexico State Medical Society to the annual meeting of the Colorado State Medical Society.

Will you kindly send me the name of your fraternal delegate to the Albuquerque meeting of the New Mexico State Medical Society? Our society meets October 2-4th, and I would like to have the name of your delegate in time to get him to take part in the program.

Appreciating your courtesy, I am,

Very truly yours,

R. E. McBRIDE,  
Secretary.

Denver, Colo., Oct. 6, 1913.

To the Colorado State Medical Society:

I hereby make my report as councilor for the Denver District, No. 2, for the past year.

No matter was reported to me requiring the action of the Board of Councilors. I was, therefore, not called upon as President to call a meeting of the board during the year.

The three societies in my district are the Denver Medical Society, the Clear Creek Medical Society and the Tri-County Medical Society.

I have frequently attended the meetings of the Denver Society, which is in a flourishing condition, but I was not called upon to act officially upon any occasion.

I visited the Tri-County Medical Society at their April meeting. This society seems to be made up of enthusiastic workers and appears to be well organized and doing good work.

During the winter I wrote, personally, to every enrolled member of the Clear Creek Medical Society, offering my services to assist them in reviving the society, if possible. But I received a response from only one of those addressed. Dr. E. P. Sherman wrote me that the society was inactive and that many of the members had left the district. Should this society continue inactive, I am of the opinion that some means should be taken whereby the residents of this district should be enabled and

encouraged to join the Denver or some other medical society.  
Yours very respectfully,  
EDMUND J. A. ROGERS.

Treasurer Miel presented his report, as follows:

REPORT OF TREASURER, COLORADO STATE MEDICAL SOCIETY, SEPTEMBER 24, 1912, TO OCTOBER 7, 1913.

Receipts.

Balance on hand September 24, 1912..	\$2,089.06
From secretary, through dues.....	2,394.00
From secretary, through Journal.....	424.55
From secretary, exchange.....	.90
Interest earned .....	61.23
	<hr/>
	\$4,969.74

Disbursements.

COMMITTEE, PUBLIC POLICY AND LEGISLATION.

1912.	
Sept. 29—E. L. Wepf, printing medical tracts .....	\$ 11.00
1913.	
Feb. 12—Dr. Amesse, chairman, circular letters to members.....	15.35
June 14—E. L. Wepf, printing pamphlets .....	5.00

Journal Maintenance.

1912.	
Oct. 10—Western Newspaper Union, September edition .....	\$ 117.70
Nov. 8—Western Newspaper Union, October edition .....	136.40
Dec. 4—Western Newspaper Union, November edition .....	156.92
Dec. 27—Western Newspaper Union, December edition .....	97.00
1913.	
Feb. 12—Western Newspaper Union, January edition .....	135.70
Mar. 12—Western Newspaper Union, February edition .....	126.70
April 7—Western Newspaper Union, March edition .....	126.70
April 22—Carson-Harper Co., stamped envelopes for editor.....	6.00
May 5—Western Newspaper Union, April edition .....	128.70
June 6—Western Newspaper Union, May edition .....	111.20
July 8—Western Newspaper Union, June edition .....	109.70
Aug. 6—Western Newspaper Union, July edition .....	102.20
Sept. 12—Western Newspaper Union, August edition .....	108.20
Sept. 29—Western Newspaper Union, September edition .....	97.70
Oct. 1—Carson-Harper Co., billheads advertising .....	1.75
Western Press Clipping Co., services Sept., 1912, inclusive, to Oct., 1913 .....	2 6.00
Denver delivery of Journal, Sept. 1912, inclusive, to Oct., 1913....	32.50

Mailing Journal, P. O. account, Sept., 1912, to Oct., 1913.....	15.00
Dr. Elder, editor's salary. Aug. 15, 1912, to Sept. 15, 1913.....	325.00

\$1,961.07

General Expenses.

1912.	
Oct. 2—Bohm-Allen Co., loving cup presented to Dr. Singer.....	\$ 31.75
Oct. 26—Gehman & Watt, reporting forty-second annual convention..	209.00
Nov. 9—Carson-Harper Co., printing by-laws .....	33.00
letterheads .....	11.50
Dec. 4—A. S. Carter, rubber stamp....	1.50
1913.	
Jan. 29—A. M. Ass'n., county society secretary's reports .....	3.50
Feb. 6—A. M. Ass'n., county secretary's report cards.....	3.50
Feb. 10—M. S. City and County of Denver, express on Journals.....	1.05
Feb. 12—Smith-Brooks Co., rebinding volumes of Journal .....	6.75
Feb. 12—Dr. M. Black, reimbursed express from A. M. Ass'n.....	1.15
telegram to Senator Thomas.....	1.35
Mar. 2—Library Bureau, Chicago, accession book .....	4.50
April 7—Carson-Harper Co., stamped envelopes for secretary .....	25.00
May 1—Dieter Bookbinding Co., books bound .....	7.25
May 3—Edith C. Malins, copying in accession book .....	3.00
Sept. 1—Dr. M. Black, salary as secretary for year ending Sept. 15, 1913 .....	200.00
Oct. 1—Carson-Harper Co., programs for forty-third annual convention.	48.00
Bank exchange .....	1.05
	<hr/>
	\$ 592.85
Cash balance forwarded.....	\$2,089.06
Receipts during year.....	2,880.68
	<hr/>
Total .....	\$4,969.74
Disbursements .....	2,585.27
	<hr/>
Cash balance .....	\$2,384.47

Respectfully submitted,  
GEORGE W. MIEL, Treasurer.

Dr. R. W. Corwin, chairman of the Committee on Health and Public Instruction, presented report of that committee, which is as follows: To the Colorado State Medical Society:  
Your Committee on Health and Public Instruction begs to submit the following report:  
The year has been devoted to ascertaining from librarians and school superintendents the needs of the public regarding literature upon the subjects of hygiene and sanitation.  
It was soon revealed that the public is taking no little interest in the subjects of health, sanitation, heredity, eugenics, environment and euthenics.  
Your committee thought it best to suggest a

list of books for the public libraries and libraries of the public schools.

A hundred or more letters were sent out to publishers, authors, teachers and officers of government and state bureaus of hygiene throughout the United States, requesting them to give titles of the best books upon these subjects.

The following list has been compiled from sixty replies received. The list, which necessarily will have to be revised from time to time, has been sent to all county medical societies, public libraries and public high schools of Colorado:

The work of this committee has just begun; there is much left to be accomplished.

It is thought this society should begin a crusade of public education, especially public school education, covering the subjects indicated by the list of books, sent to the public schools and public libraries, herein attached.

Your committee respectfully submits its report and recommends that the Committee on Health and Public Instruction, under the supervision of the State Medical Society, be requested to proceed with this important work.

R. W. CORWIN, Chairman.  
TEACHERS.

The Teacher's Health—Lewis M. Terman.  
Health and Education—Thos. D. Wood.  
Civics and Health—W. H. Allen.  
Health and Medical Inspection of School Children—W. S. Cornell.  
School Hygiene and the Laws of Health—Porter.  
Textbook of Hygiene—Robe and Robin.  
Hygiene of the Schoolroom—Barry.

#### LAITY.

Medical Inspection of Schools—Gulick and Ayres.  
Hygiene and Public Health—Whitelegge and Newman.  
Life's Day: Guide Posts and Danger Signals in Health—Bainbridge.  
Self-Building Through Common Sense Methods—Banister.  
Care of the Body—Cavanaugh.

#### HIGH SCHOOL.

Gulick's Hygiene Series.  
The Human Mechanism—Sedgwick and Rafter.  
Principles of Hygiene—Bergey.  
Hygiene for Students—Willoughby.  
Personal Hygiene, designed for undergraduates—Woodhull.  
Human Body and Health—Davison.

#### GRADES.

Gulick's Hygiene Series.  
Ritchie's Primers.  
Health Chats with Young Readers—Kelley.  
Health Lessons—Walker.  
Health Primer for Elementary Schools and Lessons in Hygienic Physiology—Coleman.

#### EUGENICS.

Heredity in Relation to Eugenics—C. B. Davenport.  
Heredity and Eugenics—Castle, Coulter, Davenport, East and Tower.

Heredity—J. Arthur Thomson.

Breeding and the Mendelian Discovery—A. D. Darbyshire.

Heredity of Richard Roe—Dr. David Starr Jordan.

Parenthood and Race Culture—Caleb W. Saleeby.

#### SEX EDUCATION (for Teachers).

The Education of the Young in Sex Hygiene—Robert N. Willson.

Training of the Young in Laws of Sex—E. Lyttleton.

The Sexual Life of the Child—Dr. Albert Moll.

Four Epochs of a Woman's Life (for girls)—Dr. Anna M. Galbraith.

Winfield Scott Hall's Series for Boys.

#### SEX EDUCATION (for High School Students).

Developing Into Manhood (boys 15 to 18 years, under adult leadership)—W. S. Hall.

Nobility of Boyhood—R. N. Willson.

Embryology, the Beginning of Life—Dr. Gerald Leighton.

Secretary Black reported on behalf of the Credentials Committee that five physicians of Crowley county have organized a society and applied for a charter, and that the constitution and by-laws submitted by such society have been carefully examined and found to be not in conflict with the constitution and by-laws of the Colorado State Medical Society, and therefore the committee recommend the charter be granted.

It was moved and seconded that such charter be granted.

This motion carried unanimously.

Dr. J. W. Ames, chairman of the Committee on Public Policy and Legislation, presented report of that committee. The report is as follows:

Denver, Colo., October 7, 1913.

Mr. President and Members of the House of Delegates, Colorado State Medical Society.

Gentlemen:—I have the honor to submit the following report of your Committee on Public Policy and Legislation:

Since our last meeting the State Legislature has held its regular session, and a number of measures have been introduced in both houses with the object of restricting the progress of organized medicine. Among these were bills to establish independent boards of medical examiners for osteopaths and chiropractics, licensing those already engaged in sectarian medicine and affording an easy route to practice for persons improperly equipped for the requirements of a learned profession.

The confusion already existing in the public mind as to what constitutes scientific medicine has been augmented in certain states that have compromised with sectarian practice to the extent of sanctioning a multiplicity of examining boards. We feel there should be but one standard in Colorado, and to this end the committee has bent every effort toward arousing general interest among the members of this society and to neutralizing the effect of an extensive and insistent lobby, organized and conducted by irregular practitioners.



Five hundred physicians, representing every section of the state, have received personal letters, urging their co-operation in influencing representatives from their respective districts to consider these measures without prejudice. Special meetings of county societies were called and joint telegrams forwarded members of the Assembly from these counties.

Members of the committee residing in Denver held frequent consultations with the physicians representing their districts in the House and Senate, several of whom are members of this society.

Arguments were presented before the Public Health Committees of the Assembly and special pressure brought to bear on these officials through influential medical men among their constituents. Notwithstanding these efforts, the bills passed the House almost unanimously and it was confidently expected in sectarian circles that the Senate would offer no concerted opposition.

To Dr. W. H. Sharpley alone are we indebted for suppressing these measures in the Senate and placing them in cold storage for the entire session. As senator from Denver county he antagonized a large number of irregulars and their friends and at great personal sacrifice sustained, practically single-handed, the dignity of scientific medicine before our lawmakers. By holding the various bills in committee, in spite of repeated and apparently not entirely disinterested appeals from members, he routed utterly the lobby maintained by the quacks, the Christian Scientists and the National League for Medical Freedom, and spared the profession the humiliation of being saddled with several examining boards.

We recommend, in view of these distinguished services, that the thanks of this society be extended Senator Sharpley, in writing, and a permanent record preserved in our minutes.

The usual educational work assigned to this committee has been carried on through the press, city newspapers with extensive circulation having been supplied with timely articles on Hygiene, Preventive Medicine and Eugenics, without expense to the society. Courses of lectures on popular medical topics have also been given in Denver by members of this society.

We recommend that this policy be continued and extended, to the end that the public may everywhere profit by the advances of modern medicine.

J. W. AMESSE, Chairman.

Committee on Public Policy and Legislation.

Dr. H. R. McGraw moved that Dr. W. T. Sharpley be given a vote of thanks for the work done by him in behalf of scientific medicine in Colorado in the late session of the legislature, and that this vote of thanks be drawn in the form of a memorial and presented to Dr. Sharpley.

Dr. Geo. A. Moleen presented the following resolution:

Whereas, The date set for the annual meeting of the American Medical Association is

June 1, 1914, a time too early for members coming from states west of the Mississippi river to take advantage of the summer tourist rates which come into effect June 1, thereby materially increasing the expense of the delegates and members, which is further increased in proportion to the distance westward, and

Whereas, The commencement exercises of most state universities occur in the first week of June, depriving thereby a number of valued members from being in attendance, and

Whereas, Meetings held at so early a date preclude the possibility of bathing and other features which are held as inducements for the annual convention at Atlantic City; therefore, be it

Resolved, That we, the House of Delegates of the Colorado State Medical Society, in annual session assembled, protest against the early date of the meeting this year, and urge the Board of Trustees of the American Medical Association to endeavor to change the date of the meeting, in order to overcome these objections; be it further

Resolved, That we urgently request that in setting the date and place of meeting the interests of the western states be duly considered, especially in the matter of transportation.

Secretary Black proposed for honorary membership the names of Dr. Emil H. Beckman of Rochester, Minnesota, and Dr. Lewis L. McArthur of Chicago, Illinois.

On motion Dr. Beckman and Dr. McArthur were unanimously made honorary members of the Colorado State Medical Society.

Secretary Black presented telegrams from various persons and organizations at Idaho Springs, inviting the 1914 meeting of the society at that place.

These were referred to the nominations committee.

Thereupon an adjournment was taken until tomorrow morning at 8 o'clock.

## MEETING OF THE HOUSE OF DELEGATES.

8 O'clock A. M., Wednesday, Oct. 8, 1913.

The meeting was called to order by President Black.

The secretary called the roll, reporting twenty-one members of the House of Delegates present, a quorum.

Minutes of last meeting were read and approved.

Dr. H. A. Black, for the Nominating Committee, reported that the committee was not yet ready to report. By vote the time was extended until this afternoon.

The report of the Committee on Necrology was presented.

Report of the Committee on Reports of Officers was read; on motion the recommendations contained therein were adopted.

Dr. Carmody presented report of Committee on Reports of Committees, which was read and adopted.

Committee from Colorado Pharmacal Association presented report and resolutions adopted at meeting of that association. This report was referred to committee composed of Doctors

Epler, Miel and Dodge.

Report of Committee on Miscellaneous Business was presented, stating that they had considered resolution presented by Dr. George A. Moleen and recommended its adoption by the House of Delegates, and that it be sent to the Secretary of the Board of Trustees of the American Medical Association. This report was adopted.

**REPORT OF COMMITTEE ON NECROLOGY OF THE COLORADO MEDICAL SOCIETY, OCTOBER 7, 8, 9.**

It is a striking fact that during the past year a great many of the leaders of our profession have been taken from us, men whose deaths have created individual vacancies that one feels can never be refilled. When human beings of certain pronounced types are called from any walk of life, there results a general feeling of personal loss among those who are left; and so it is upon this occasion that in considering the names of those contained herein, there will come to all of us a feeling of genuine, personal regret and sorrow, a feeling that some of these men have been prematurely called, and yet a feeling of thankfulness that we have been privileged to know and appreciate and love certain of them during their active careers, representing as they did the best in mankind and in our profession. It did not require death to draw to our attention the fact that these men meant much to us, nor can the mere words of this committee impress upon its hearers any more forcibly the substantial things that they stood for. Their lives bespoke themselves, and far be it from us to attempt more than to merely outline in this report the things noble and uplifting which they, our professional brothers, represented. The following includes those members of this society who have died during the past year:

Dr. W. H. Buchtel died in his office, in the Metropolitan building, October 14, 1912. He was 67 years old and had practiced in Colorado since 1871. He was graduated from Chicago Medical College in 1866, and is survived by his widow and one daughter, both of Denver.

Dr. J. B. Gaston of Cripple Creek, who was a member of the Teller County Society, died November 12, 1912, at his office. Dr. Gaston was born January 26, 1851, and had practiced in Colorado since January, 1896. He was President of the Teller County Medical Society and in every way took an active part in the proceedings of the society, and in practice in his community. He was graduated from Rush Medical College, 1888.

Dr. J. D. Barry died December 28, 1912, at his home in Denver. He was graduated from Northwestern in Chicago in 1906. The doctor, while young in his profession in Colorado, was taking a prominent part, and his premature death was a source of great shock and regret to his many friends.

Dr. E. L. McKinney died February 15, 1913. He was born in 1848 and graduated from the Keokuk Medical College in 1880, and was prominently identified with the profession in Colorado Springs. He was much loved by his pro-

fessional brothers in that place and over the state.

Dr. P. F. Gildea died March 6, 1913, at his home in Colorado Springs. He was graduated from the College of Physicians and Surgeons, New York, in 1889, and came to Colorado in 1892, where he took up active practice in Colorado Springs. In losing Dr. Gildea this society loses one of its brightest and most loved members.

Dr. Arnold Stedman died March 22, 1913, at the home of a patient, and in his death there ended the career of a man whose life and work had stood at all times for the highest of our ideals. The doctor's life, professionally and personally, was an inspiration to all who had ever known him, and his death represents a great loss to the profession of Denver and this state. Dr. Stedman was born in 1839 and graduated from the Berkshire Medical College in 1865.

Dr. D. J. Scully died at his home in Colorado Springs June 16, 1913. He had been prominently identified with the profession in this state for over ten years, and his future was indeed a bright one. He was born in 1875 and graduated from P. & S., New York, in 1899, and was licensed in Colorado in 1902.

Dr. J. M. Blaine died August 31, 1913, at Bedford City, Virginia, where he had gone in search of health. The doctor had been for several years incapacitated on account of ill health, and in his death Denver loses one of its oldest practitioners. He was born in Pennsylvania in 1855 and graduated from Jefferson Medical College in 1881.

(Signed.) EDWARD WELLS COLLINS,  
Chairman.

To the House of Delegates:

Gentlemen:—We, your Committee on Reports of Officers, would respectfully recommend the inclusion of a lady member on the Committee on Health and Public Instruction, to comply with the request made in Exhibit "B" of the Secretary's report.

We believe that a copy of the Insurance Commissioner's letter of information regarding insurance examinations and laws should be sent to each constituent society secretary, to be read in open session.

We would also recommend that the prize of \$100.00 for an essay based upon original work be continued under the same conditions defined at the last session.

We believe the reports of the Secretary and Treasurer should be accepted and placed on file, after having been audited by the Auditing Committee.

We recommend the adoption of the report of the Councilor for the second district and believe that the information should be conveyed to the members of the Clear Creek district of their eligibility to membership in the Denver or Boulder societies; or, if deemed advisable, to instruct the Councilor of this district to take such steps as will lead to the re-establishment of the interest in the society work.

We recommend the acceptance of the excel-



lent report of the Delegate to the A. M. A. and that it be placed on file.

Respectfully submitted,

H. C. DODGE,  
J. E. SCANNELL,  
GEO. A. MOLEEN,  
Chairman.

To the House of Delegates of the Colorado State Medical Society:

We, your Committee on Reports of Committees, beg leave to submit the following:

Recognizing the excellent work done by Dr. Corwin and his Committee on Health and Public Instruction, we believe their recommendation that the society begin a crusade of public school education be followed out.

To this end this society should furnish lecturers when possible to teachers' institutes and high schools.

We further recommend that Dr. Corwin be continued as chairman of this committee.

The Committee on Public Policy and Legislation, despite the apathy of the majority of the society, have worked diligently and without hope of reward. We therefore recommend that they receive the thanks of this society.

We further would suggest that their recommendations regarding articles in the lay press be carried out during the year.

The courses of lectures given during the year in Denver on topics of interest to the laity should, we believe, be arranged for throughout the entire state.

Respectfully submitted,

THOS. A. MCINTYRE,  
DR. G. E. VAN DER SCHOUW,  
T. E. CARMODY.

Mr. H. B. Se Cheverell, representing the Colorado Pharmacal Association, addressed the House of Delegates as follows:

Gentlemen of the Colorado Medical Association:—Last June in the meeting of the Colorado Pharmacal Association some remarks were made about the controversy which occurred in the city of Pueblo between some of the Pueblo druggists and the medical society there, relative to a certain line of medicines, or something of that kind, that were displayed in one of the drug store windows, and that brought up a discussion during our meeting, and a resolution was passed, of which the following is a copy.

Denver, Colo., Oct. 7, 1913.

Whereas, Practices inimical to the interests of both the medical and pharmaceutical professions exist in the advertising and marketing of many fake nostrums, and

Whereas, We believe that both professions would benefit by a closer affiliation and better understanding, which might be brought about by a friendly discussion of the problems affecting both; therefore, be it

Resolved, That a committee of three be appointed to represent the Colorado Pharmacal Association at the approaching annual meeting of the Colorado State Medical Society at Glenwood Springs, provided such action meets with the approval of the Medical Society.

The above resolution was adopted at the 1913

meeting of the Colorado Pharmacal Association, held at Glenwood Springs, June 18-20, 1913.

CHAS. J. CLAYTON, Secretary.

Mr. Se Cheverell:

This resolution was adopted unanimously by our association at our meeting mentioned. We took the matter up with your secretary, Dr. Black, and he assured me that so far as he could see it would be entirely satisfactory to your society to have our committee represented here.

I have no regular address prepared, but will say just a few words along this line, bearing upon my personal experience. Some five or six years ago I was President of our Denver Pharmaceutical Association, and during the winter we called together the druggists and the physicians, just for a social meeting. The results of that meeting were very satisfactory to us personally, and I think to the physicians whom we met. I think most of the differences or complaints which physicians may have from druggists come from a lack of social and personal acquaintance with the individual druggist. The druggists are not all angels by any means, we do not claim that, but I do claim that as you get to know them you will find them as a rule a pretty square set of fellows. I think that much good could be accomplished by a closer social relation between the two professions. Neither can exist without the other. The druggist could not get along and pay expenses without the co-operation of the physician in the prescription work. Neither could the physician get the best results from his practice unless his prescriptions were properly filled and dispensed. These are self-evident facts. And the purpose at the present time of the representatives of our committee, Mr. Taylor and myself, is to answer any questions or enter into any discussion which seems advisable.

Dr. Crum Epler presented the following proposed amendment to section 4, chapter v. of the by-laws of the Colorado State Medical Society. This was referred to the Committee on Miscellaneous Business.

An adjournment was then taken until 1 o'clock.

#### MEETING OF THE HOUSE OF DELEGATES.

Wednesday, October 8, 1913, 2:20 P. M.

The meeting was called to order by the President.

There being a quorum present, the meeting proceeded to business.

Dr. Crum Epler read the report of the committee appointed to confer with the committee representing the Colorado Pharmacal Association, which report is as follows:

"Your committee appointed to confer with the committee representing the Colorado Pharmacal Association beg to report the following:

"We recommend the appointment of a special committee of three (3) by the incoming President, to confer with a similar committee rep-



representing the Colorado Pharmacal Association, upon matters of mutual interest.

"CRUM EPLER,  
Chairman.  
H. C. DODGE.  
"GEORGE W. MIEL."

Mr. Taylor, representing the Colorado Pharmacal Association, addressed the meeting as follows:

We want to thank you for the cordial manner in which you have received us, and I believe that the action which you have taken on this resolution will come to some mutual good to our respective organizations.

We came here through a feeling upon the part of the State Pharmacal Association that there were interests in common between the two professions that could be helped by an active co-operation between them. Our Association felt that the physicians and the druggists had perhaps been gradually drifting apart, something that should never have happened, and they felt, perhaps, that there should be a more cordial understanding and co-operation with each other, in order that we might accomplish some things which are needful to us both. And that is why Mr. Se Cheverell and I are here today.

We come with a cordial feeling of co-operation towards you. I shall not attempt to make any speech, nor enumerate many of the things that we think should be remedied, but I do want to say this, that, for instance, we have a pharmacy law which is a very poor excuse of a law. That is of interest to you gentlemen, as it is for the public interest. And as a matter of fact, in Pueblo, for instance, every little corner grocery store sells carbollic acid, laudanum, tincture of iodine, paregoric and all those things put up by little manufacturing houses. These things are sold indiscriminately, and we think that the public should be protected against this, and we think if the pharmacist is a registered and capable man he, too, should be afforded some protection. We believe that the physicians will co-operate with us in helping us to secure needed legislation of that and other characters.

Pharmacy we feel has degenerated from the very fact that the comprehensive advertising that has been going on throughout the newspapers has fostered all sorts of self-medication, that must ultimately bring nothing but ruin to the trade of pharmacy, and we believe that there should be a law upon the statute books of this state that would prevent this lying and malicious advertising, such as is being daily perpetrated throughout the public press.

The gist of the matter is this, gentlemen: We felt, and that was my position, that the only way we could have these things remedied was through legislation. We can secure such legislation only by having friends in the legislature. We felt, and we found by actual experience, that it was folly to talk to men composing a legislature who had been taught by the yellow press to believe that we were all thieves and robbers; they would not listen to what we had to say, and they did not under-

stand the questions involved. We felt that we needed an active co-operation in the coming campaign and in the next legislature; that we would need some of our friends in that legislature, and that in that way we might ultimately accomplish something to the benefit of all.

That is the sum and substance of the whole thing. The secretary of our association has been authorized to go out and do propaganda work, in order that we may have every druggist within the state within the Association, so that we will be in position to do something for ourselves.

We thank you for permitting us to come before you, and assure you that the Colorado Pharmacal Association as a body are trying to rid themselves of all the undesirable features; they are trying to elevate the practice of pharmacy throughout this state, and we realize the black spots and black sheep within the fold (the same sort, perhaps, that you gentlemen have), and we are trying our best to better that condition, and we want your assistance along that line.

PRESIDENT BLACK: I believe I may be permitted to state on behalf of the House of Delegates that this committee, which is to be appointed by the incoming President, will co-operate with these gentlemen in trying to bring about needed legislation, or anything that will be for the benefit of both the doctors and the pharmacists. On behalf of the House of Delegates I wish to thank the gentlemen for coming here, and we also hope that some good may come from the efforts in this direction, as we feel sure will be accomplished.

The report of the Committee on Nominations was read, which report is as follows:

We, the undersigned, your Nominating Committee, beg leave to submit the following:

President—  
O. M. Gilbert .....Boulder  
O. Lyons .....Denver  
First Vice President—  
Dr. W. W. Crook.....Glenwood Springs  
Second Vice President—  
Dr. Geo. A. Boyd.....Colorado Springs  
Third Vice President—  
A. R. Scott .....Strong, Colo.  
Fourth Vice President—  
Dr. R. W. Arndt .....Denver  
Board of Councilors—  
Second District:  
Dr. J. W. Amesse .....Denver  
Third District:  
Dr. E. A. Elder .....Pueblo  
Delegate to American Medical Association—  
Dr. Lewis H. McKinnie.....Colorado Springs  
Alternate—  
Dr. O. D. Westcott .....Denver  
Publication—  
Dr. A. J. Markley .....Denver  
Meeting Place .....Boulder

We recommend that the meeting be held between the 15th and 30th of September.

We further recommend that the Editor of Colorado Medicine be selected outside of the Committee on Publication.

We desire to suggest that Denver be the place of meeting more frequently in the future than in the past. We make this suggestion owing to the location and the great clinical advantages of Denver, which should be open to the members of this society.

HERBERT A. BLACK.  
 GEORGE E. VAN DER SCHOUW.  
 GERALD B. WEBB.  
 H. C. DODGE.  
 H. R. MCGRAW.

Secretary Black read a bill presented by the Denver & Rio Grande Railway Company.

It was moved and seconded that this bill be referred to the Appropriation Committee, which motion, upon being put, was unanimously carried.

An adjournment was then taken until tomorrow morning at 8 o'clock.

#### MEETING OF THE HOUSE OF DELEGATES.

Thursday, October 9, 1913, 8:30 A. M.

The meeting was called to order by the President.

Secretary Black called the roll and, a quorum being present, the meeting proceeded to business.

The minutes of the last two meetings were read and approved.

Election of officers was the next order of business. Secretary Black read the list of nominations as recommended by the Nominating Committee.

The name of Oliver Lyons was withdrawn as candidate for President.

It was moved and seconded that the Secretary cast the ballot of the House of Delegates for the election of O. M. Gilbert of Boulder as President. The motion was carried, and the Secretary reporting the ballot so cast, O. M. Gilbert was declared duly elected as President.

It was moved and seconded that the Secretary cast the ballot of the House of Delegates for the election of W. W. Crook of Glenwood Springs as First Vice President. The motion was carried, and the Secretary reporting the ballot so cast, W. W. Crook was declared duly elected as First Vice President.

It was moved and seconded that the Secretary cast the ballot of the House of Delegates for the election of George A. Boyd of Colorado Springs as Second Vice President. The motion was carried, and the Secretary reporting the ballot so cast, George A. Boyd was declared duly elected as Second Vice President.

It was moved and seconded that the Secretary cast the ballot of the House of Delegates for the election of A. R. Scott of Strong as Third Vice President. The motion was carried, and the Secretary reporting the ballot so cast, A. R. Scott was declared duly elected as Third Vice President.

It was moved and seconded that the Secretary cast the ballot of the House of Delegates for the election of R. W. Arndt of Denver as Fourth Vice President. The motion was carried, and the Secretary reporting the ballot so

cast, R. W. Arndt was declared duly elected as Fourth Vice President.

It was moved and seconded that the Secretary cast the ballot of the House of Delegates for the election of J. W. Ames of Denver as member of the Board of Councilors from the Second District. The motion was carried, and the Secretary reporting the ballot so cast, J. W. Ames was declared duly elected as such member of the Board of Councilors.

It was moved and seconded that the Secretary cast the ballot of the House of Delegates for the election of E. A. Elder of Pueblo as member of the Board of Councilors from the Third District. The motion was carried, and the Secretary reporting the ballot so cast, E. A. Elder was declared duly elected as such member of the Board of Councilors.

It was moved and seconded that the Secretary cast the ballot of the House of Delegates for the election of L. H. McKinnie of Colorado Springs as delegate from the Colorado State Medical Society to the meeting of the American Medical Association for 1914. The motion was carried, and the Secretary reporting the ballot so cast, L. H. McKinnie was declared duly elected as such delegate.

It was moved and seconded that the Secretary cast the ballot of the House of Delegates for the election of O. D. Westcott of Denver as alternate delegate to the meeting of the American Medical Association for 1914. This motion was carried, and the Secretary reporting the ballot so cast, O. D. Westcott was declared duly elected as such alternate delegate.

It was moved and seconded that the Secretary cast the ballot of the House of Delegates for the election of A. J. Markley of Denver as a member of the Publication Committee. The motion was carried, and the Secretary reporting the ballot so cast, A. J. Markley was declared duly elected as such member of the Publication Committee.

It was moved and seconded that the Secretary cast the ballot of the House of Delegates for the selection of Boulder as the next meeting place of the society. The motion was carried, and the Secretary reporting the ballot so cast, Boulder was announced as the next meeting place.

Upon motion, duly seconded and carried, the question of the time of meeting of the society in 1914 was left for decision by the incoming President and Secretary.

Upon motion, duly seconded and carried, the recommendations of the Nominating Committee were laid on the table.

A. T. King read the report of the Committee on Miscellaneous Business, which report is as follows:

Your Committee on Miscellaneous Business begs to report on the amendment to the by-laws as follows:

That the Committee on Miscellaneous Business have carefully considered the proposed amendment to Chapter V, and have made such changes as to render it not incompatible with Sections 1, 2 and 3 of the by-laws.

Amendment to by-laws. Substitute for Section 4, Chapter V:



## News Notes

Section 4. Each delegate shall be entitled to cast one vote and no more, and shall represent his own County Society, and no other. His credentials shall be signed by the Secretary of his society. Each Constituent Society shall elect a first and second alternate for each delegate. The delegate shall serve in the event of his presence at the State Society meeting, and the first alternate shall serve in the absence of the delegate, and the second alternate in the absence of the other two. No representation will be accorded a society whose delegates and alternates are absent. Nothing in this section shall be construed to prevent any duly certified delegate or alternate from serving alternately, provided that but one shall serve at a time. Proxies will not be recognized under any circumstances.

Upon motion, this report was adopted.

It was moved and seconded that by-law as proposed in the foregoing report be adopted. After discussion the motion prevailed.

H. W. McLauthlin read the report of the Appropriations Committee, which is as follows: Members of the House of Delegates of the Colorado State Medical Society.

Gentlemen:—Your Committee on Appropriations for the coming year beg leave to report as following recommendations:

For Colorado Medicine.....	\$2 per capita
Editor Colorado Medicine.....	\$300.00
Secretary Colo. State Medical Society..	200.00
Programs and mailing.....	60.00
Committee on Public Policy.....	100.00
Prize for original research work.....	100.00
Emergency and incidentals.....	50.00
Bill of D. & R. G. R. R. for expenses account special train .....	23.40
Expenses Dr. L. L. McArthur.....	75.00
Stenographers .....	200.00

Respectfully submitted,

H. W. McLAUTHLIN.

W. T. H. BAKER.

G. WEBB.

Upon motion, duly, seconded, the report was unanimously adopted.

J. C. Chapman, for the Auditing Committee, reported that the committee had examined the books and accounts of the Secretary and Treasurer, respectively, and found them correct; that written report of the Auditing Committee to this effect was to be found in the Treasurer's book at page 239. Upon motion, duly seconded and carried, the report was unanimously adopted.

George A. Moleen, for the Publication Committee, reported that the expense of the journal, Colorado Medicine, was shown in the report of the Secretary and Treasurer. The usual report from the editor had not been made.

Upon motion, duly seconded and carried, the meeting was adjourned sine die.

Dr. Leslie J. Parker of Cripple Creek was recently married to Mrs. Marion Logan of Colorado Springs.

Dr. J. A. Rutledge of the Modern Woodman Sanitarium celebrated his fifty-second birthday by giving a dinner to his patients at the sanitarium.

Dr. Walter Morritt, recently superintendent of the Minnequa hospital and head of the sociological department of the Colorado Fuel and Iron Company, has resigned from that position to accept the superintendency of the Bethel hospital of Colorado Springs.

Dr. W. S. Cleland of Delta and Miss Cordelia Stein were married in Denver September 3.

Dr. Elsie Seelye Pratt has left Denver to assume duties on the Health Service Bureau of the University of Michigan.

Dr. Fred D. Worlton and Miss Lena Sowards, both of Manassa, were married August 27.

The University of Colorado has replaced its former Senate, which acted in an advisory capacity in the control of the medical department, with a smaller executive committee. This committee consists of Dr. Edward Jackson, Dr. Robert Levy, Dr. O. M. Gilbert of Boulder and Dr. W. A. Jayne.

Dr. A. J. Bloomfield of Meeker was recently married to Miss Lena Kracht at Glenwood Springs.

Dr. F. P. Hanson, who has been serving an internship in a Salida hospital, has now located in Gunnison.

Dr. Leonard W. Ely, sometime Editor of Colorado Medicine, has accepted the associate professorship of orthopedic surgery in the Leland Stanford University and has removed to San Francisco.

Dr. R. Albi of Denver was attacked in his office by an insane miner. The patient fired upon the doctor, but owing, probably, to a serious defect of vision the bullet missed the mark widely.

Dr. Allison Drake died recently at the Park Avenues hospital in Denver. Dr. Drake was not well known among physicians in Colorado, because his interest was largely outside of medicine. He was a philologist of fame and ability. Recently he completed a work in which he attempted to establish a relation between Semitic and the Indo-European tongues.

Dr. J. B. Roberts of Palisade, who has been in a hospital at Grand Junction, sick with spotted fever, has recovered.

A committee from the Chamber of Commerce of Colorado Springs, consisting of Drs. H. W. Hoagland, W. F. Martin, P. D. Mayhew, W. H. Swan and G. B. Webb, has been formed for the purpose of looking to the more rigid enforcement of public health regulations, particularly the nuisance of spitting in public places.

Dr. William Holmbach, house physician at the St. Francis hospital at Colorado Springs, was married recently to Miss Margaret Lenora Pierce of Council Bluffs, Iowa.



Dr. E. W. Emery was found unconscious in his garage on the morning of October 1. He had been working with his automobile when he became poisoned by carbon monoxide gas generated by the burning of a pilot light.

Dr. George H. Cattermole of Boulder will leave soon for a four months' post-graduate sojourn in Vienna.

Mrs. Clara Adeline Stedman, the venerable wife of the late Dr. Arnold Stedman, died at her home in Denver September 29.

Dr. Letitia Wiseman of Cheyenne, Wyoming, died in Denver September 22. Dr. Wiseman had attended school at the University of Colorado and had graduated at the Denver and Gross school. Although her field of practice was in another state, she was well known in Denver.

Dr. Chester A. Tygert of the staff of the Agnes Memorial Sanitarium was married in Littleton September 26 to Miss Laura C. Harvey.

Dr. Robert Levy was a guest at the recent meeting of the Utah State Medical Society. He delivered an illustrated address on the use of the X-ray in making the diagnosis of diseases of the accessory sinus of the nose.

Dr. J. W. Ames addressed the nurses of the Hospital of the City and County of Denver at their commencement exercises. His theme was "The Nurse in the Public Service."

Dr. Carroll E. Edson has returned from his trip abroad. At the first meeting of the year of the Medical Society of Denver he gave an informal talk on the work and the entertainment furnished to the International Medical Congress, which he attended at London.

Dr. G. P. Lingenfelter has been appointed county physician for Denver.

Dr. George H. Stover attended the meeting of the American Roentgen Ray Society at Boston.

The meeting of the American Public Health Association held at Colorado Springs in September was one of the largest and most successful in the history of the society. It was attended by the most distinguished sanitarians of this continent.

The Association of Military Surgeons held its annual session in Denver September 16 to 19. About one hundred visitors were present.

## Constituent Societies

### SAN LUIS VALLEY.

The San Luis Valley Medical Society held an open public meeting at Monte Vista, Colo., on September 1st. The program consisted of music and addresses by Mayor Bronaugh, Rev. Moore, Dr. McFadzean and Dr. C. E. Tennant of Denver. Dr. Tennant's address before a full house was enjoyed by all present. A brief summary of which follows:

Prevention of early mortality is the slogan of every walk in life. The present great peace movement being an important example. Railroads, street car systems and steamships are

striving as public carriers to secure such devices as will prevent the great human disasters that have occurred in the past.

Public sentiment has been quite indifferent to the controlling of epidemics and diseases, and so the burden of sanitary prevention has fallen to the medical profession.

Greed was the cause of the downfall of the ancient races, and is today fighting progress and development. It is today the prime factor in opposing modern methods of stamping out disease.

He referred to the work of the Panama canal zone and results obtained.

Arguments were made for general vaccination of the public, as quarantine regulations will never stamp out smallpox. Individuals who contract typhoid from drinking contaminated water should be cared for by the city, while those who contract smallpox from neglect or refusal to be vaccinated should pay all the quarantine expenses as well as his own.

He referred to the present ineffectual operation of the pure food laws and its weak points and urged legislative enactment to correct the faults. He argued for the enactment of a National Department of Health. Colorado appropriated \$69,000 for game and fish department and only \$24,500 for health bureau. If the state will not safeguard the health of its citizens, should it not support the widows and orphans who are made such as a result of preventable disease?

Candidates for legislature should be required to state their positions regarding health laws and after election be reminded of their pledges.

Child mortality in the United States is 30 per cent with children under five years of age and one of the great causes is in the milk supply. Clean up the dairy.

From a commercial standpoint the physician would be better off to cease his efforts in controlling disease, but the true physician will always be found fighting for the right.

L. L. HERRIMAN, Secretary.

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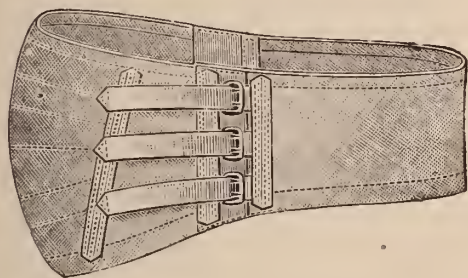
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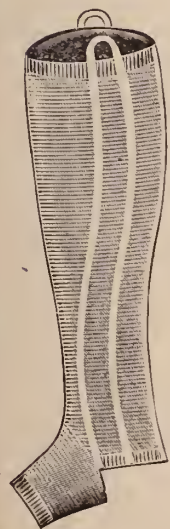
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### Extract from the By-Laws of the Colorado State Medical Society

Sec. 4. Each Constituent Society shall have jurisdiction and general direction of the affairs of the profession in the territory covered.

Sec. 5. Each Constituent Society shall be the judge of the qualifications of its own members, but as such societies are the only portals to this Society and to the American Medical Association, every reputable and legally qualified physician residing within its jurisdiction who does not practice or claim to practice and agrees not to practice sectarian medicine, shall be entitled to membership.



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2. The menstruum and the manipulation during extraction assure the most active and permanent product possible.

3. The fluid extract is carefully tested by physiologic methods to insure activity and uniformity.

4. It is marketed in amber bottles, each enclosed in a carton which protects it from light.

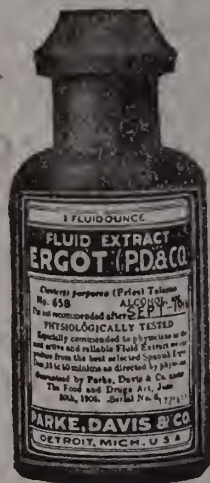
5. It is supplied in *one-ounce vials only*.

6. This small bottle is designed for dispensing on the physician's prescription. It guarantees an original package, prepared and kept under the best possible conditions. It obviates the likelihood of getting Ergot from a partly emptied container with consequent deterioration through oxidation or loss of alcohol.

7. The label on each carton and vial bears a date, after the expiration of which we do not advise the use of the fluid extract.

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New York Academy of Med.  
17 W. 43d St., New York

THE JOURNAL OF THE COLORADO STATE MEDICAL SOCIETY  
OFFICE OF PUBLICATION, METROPOLITAN BUILDING

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# The Colorado State Medical Society

INCORPORATED NOVEMBER 1, 1888.

The Next Meeting Will Be Held at Boulder in September, 1914

## OFFICERS.

**President:** O. M. Gilbert, Boulder.

**Vice Presidents:** 1st, W. H. Crook, Glenwood Springs; 2nd, Geo. A. Boyd, Colorado Springs; 3rd, A. R. Scott, Strong; 4th, R. W. Arndt, Denver.

**Secretary:** Melville Black Metropolitan Bldg., Denver.

**Treasurer:** Geo. W. Miel, Metropolitan Bldg., Denver.

## Board of Councillors.

### Term expires.

1914—G. H. Cattermole, Boulder; F. W. E. Henkel, Silverton.  
1915—C. F. Gardner, Colorado Springs; E. A. Whitmore, Leadville.  
1916—A. G. Taylor, Grand Junction; J. C. Chipman, Sterling.  
1917—Horace G. Wetherill, Denver; A. R. Pollock, Monte Vista.  
1918—J. W. Amesse, Denver; E. A. Elder, Pueblo.

## Delegates to American Medical Association.

### Term expires.

1914—Walter A. Jayne, Denver.  
1915—L. H. McKinnie, Colo. Spgs.

### Alternates.

Frederick Singer, Pueblo.  
O. D. Westcott, Denver.

## COMMITTEES.

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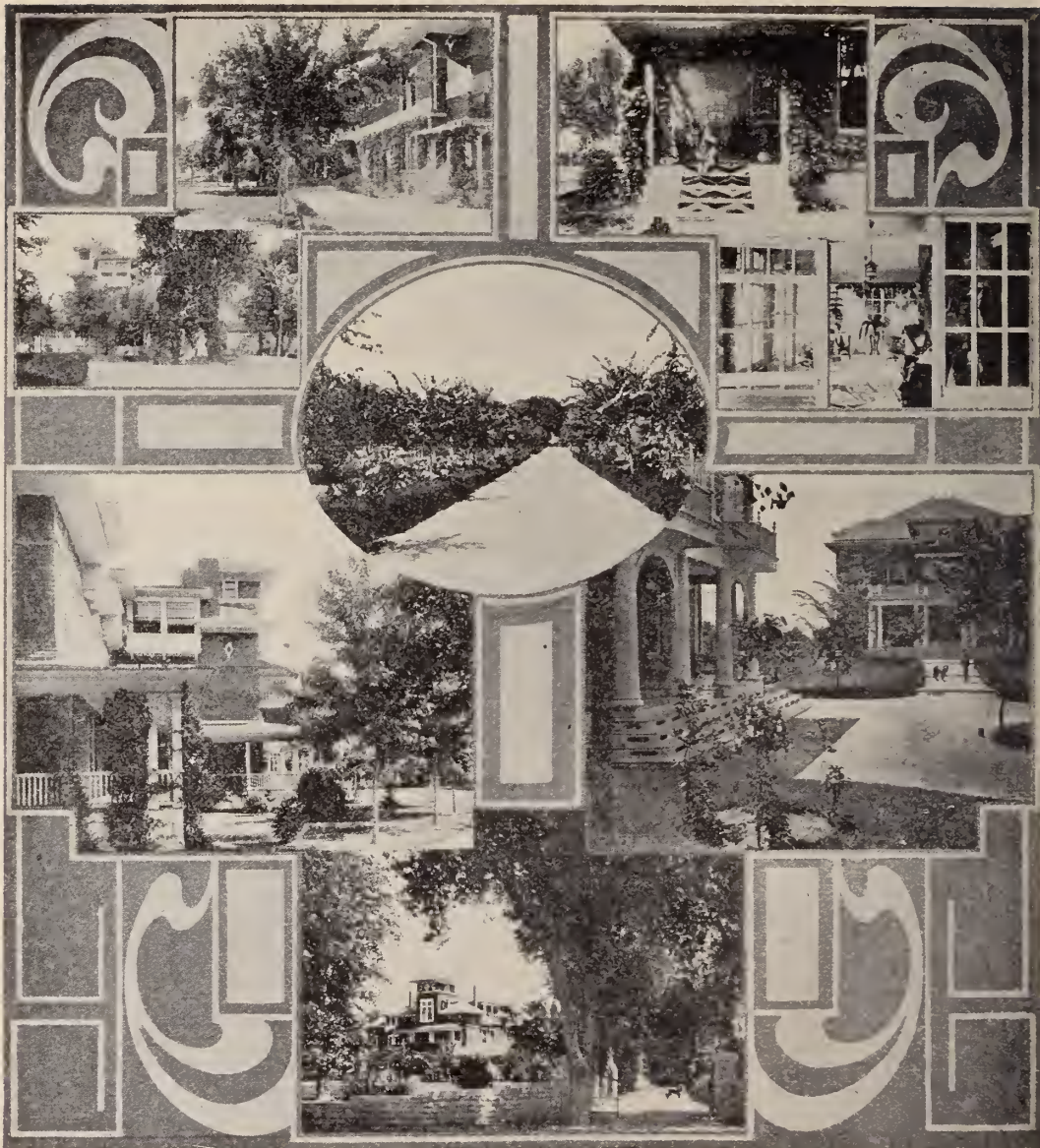
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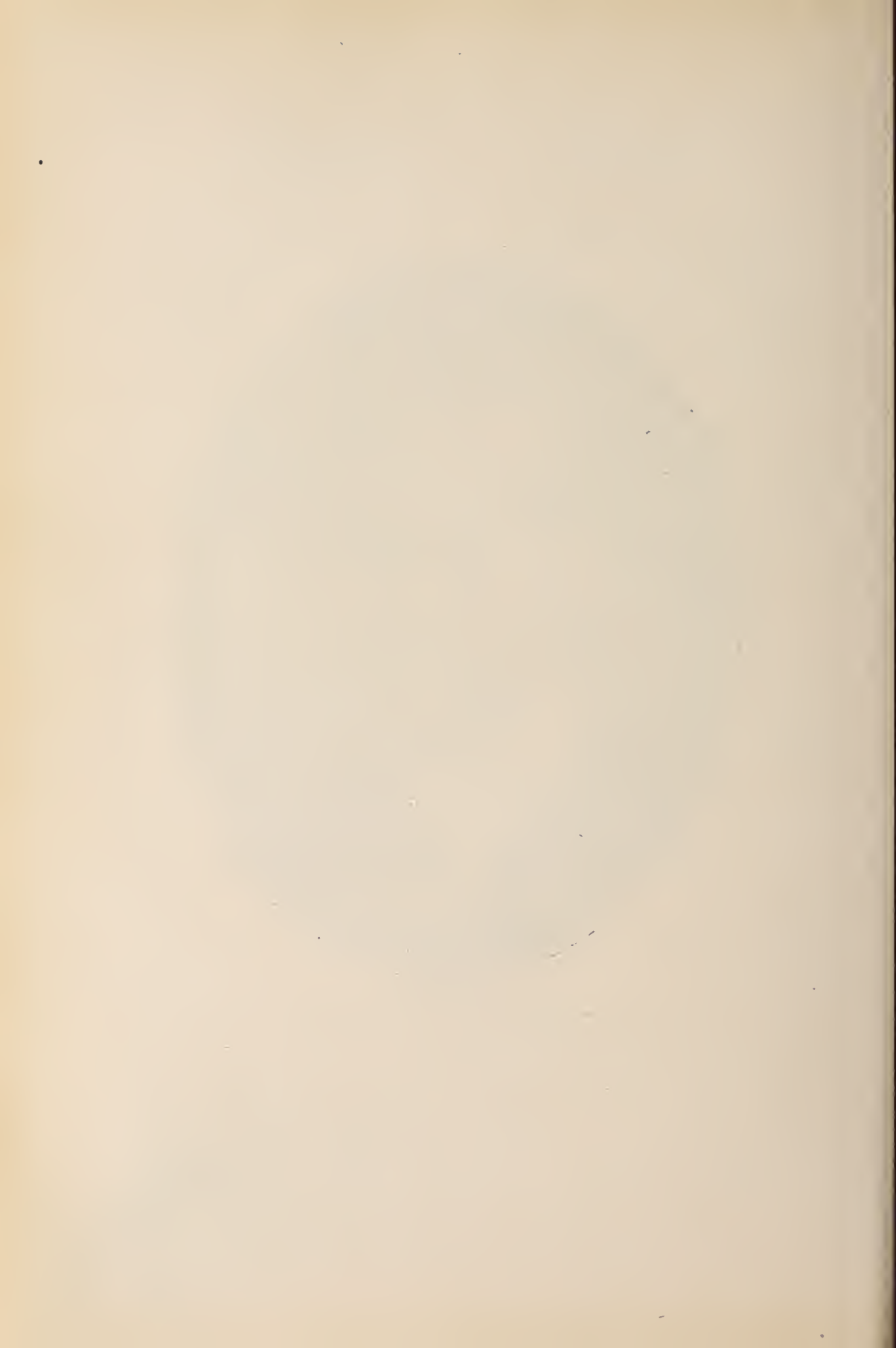
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# Colorado Medicine

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NO. 11

## Editorial Comment

DR. O. M. GILBERT.

This issue of Colorado Medicine contains a picture of the new President of The Colorado State Medical Society, Dr. O. M. Gilbert of Boulder. Dr. Gilbert was born in 1873. He is, therefore, forty years old, just in the zenith of mental power and still on the eastern horizon of prospective fame.

Some twenty years ago a tow-headed young man stood on the bridge at St. Louis seemingly watching the puffing and splashing vessels as they bore their heavy freight along the wide Mississippi. It was Oscar Gilbert. He was not studying the oscillations of the world's mercurial markets. He was trying to decide in which one of the thirty-eight medical schools of St. Louis he would begin his busy life. He chose the Barnes or with more judgment the Barnes choose him. He graduated from this institution in 1898, and came, a year later, to Colorado to locate in Boulder. He very soon became a leader among the unusually well qualified physicians who care for the discriminating people of that Athens of the West. He is Professor of Medicine in The University of Colorado. His elevation to the presidency of the state medical society was earned by active work.

He has written papers that have always attracted attention and has shared generously in the discussion of subjects relating to internal medicine.

Last year Dr. Gilbert spent some months studying in Europe, chiefly in that Mecca of the American physician, Vienna. He returned last winter in time to push another high-chair up to his lengthing table with his left hand, catch the gavel of the State Medical Society in his right hand and to attend to the wants of a waiting clientele with some of his other hands. In addition to all this the executive committeemanship of the state medical school fell, almost at the same time, upon his broad shoulders. "Going some," one might say. It certainly is, but that is an expression which the editor of a medical journal may not use. Going is his custom. The full energy of this speeding human cannon ball will be measured in Boulder next October.

## FOR A BETTER JOURNAL.

The State Medical Society has made a more generous provision for its official publication. The purpose is to make a greater and better COLORADO MEDICINE. How can this be done? What is your suggestion? There are two forces in nature—the push and the pull, or in the language of the hour—the knock and the boost. You may use whichever you like. When a Denver

daily asked its subscribers whether it should use red ink the responses were numerous and enthusiastic. This is your journal. The question is not about its color, but about its size and character. Is it worth while for you to answer?

Perhaps you would appreciate a few suggestions that arise from editorial experience.

COLORADO MEDICINE is a state journal. It has abundant ambition to acquire excellence but it does not aspire to a circulation beyond state lines. If it can supply to one thousand physicians within this sunny commonwealth a good, readable and scientifically sound journal of profitable size, its yearnings are satisfied. It could not get, nor does it greatly desire literary help from without its designated territory. It wishes the contributions to medicine of Colorado men for the use of Colorado men.

We know one another fairly well but not so well as could be desired. We can become better acquainted through our writings and by association at our annual meetings. The writings of those we know have a peculiar interest for us aside from their scientific value. What is this that Work is saying from his oracle at Woodcroft? It is not medicine alone but Work we wish to hear. When Corwin writes of hernia, or eugenics, or social medicine we learn somewhat of these things, but we learn too of what a friend has thought and done. The device of a Cochems for intestinal anastomosis is interesting to us even if we condemn it wholly, for which judgment it would trouble one to find a reason. We know him. We would like to know what thoughts are tramping through his mind, call such desire gossip if one will.

To fulfill this purpose as a purveyor of home products for home consumption the output of the state medical society is insufficient. There are many good papers prepared for meetings of the county societies. The secretaries should urge the authors of

these papers to send them to COLORADO MEDICINE for publication. The number of readers will be worthy of anyone's literary effort, and readers, too, who will be more interested than any others because of their acquaintance with the authors.

It is occasionally urged that more news items concerning the goings, comings and doings of Colorado physicians should be published. But how are these to be secured? The editor lives in Denver. He doesn't wish COLORADO MEDICINE to be or even to seem a *Denver* publication. How is he to learn of the interesting affairs of the men remote from his field of work? Will the secretaries of the constituent county societies supply news items about their members? The societies should require this work to be done by them. It never has been done. The State Society subscribes to a newspaper clipping bureau for the purpose of getting news about Colorado physicians but in the returns from this source there is no distinction between dentist, osteopath, veterinarian and physician. They are all "Dr." So-and-So. It is hard for the editor to make appropriate selection from such news items. Every county secretary should regard himself as the local correspondent of COLORADO MEDICINE.

It is desirable that more regular and more extended reports of the proceedings of the county societies should be published. The furnishing of these reports is the plain duty of secretaries. Other societies and other people would derive benefit from them. Twenty-five years from now someone will write a history of the Weld County Society, let us say, and every detail necessary for this work should be found in the bound volumes of COLORADO MEDICINE. What we are doing today has its present purpose but it will be as interesting twenty-five years hence as are the discussions of the tanned pioneers of western medicine a quarter of a century ago.



COLORADO MEDICINE once published a department called "Progress of Medicine." It contained comments of certain associate editors upon the important additions to medical knowledge. This department was abandoned because review work is so commonly and so thoroughly done by other journals that ours could hardly hope to do its best work in this way. This journal should serve a purpose that no other journal can serve or it has no cause for its existence. When it assumes duties that other journals can do better and are doing better it wastes its funds and energies. There may be occasion to quarrel with this conclusion.

Strangely all these suggestions apply to others than the editor. Perhaps someone will make some pointed proposals to him.

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#### MEDICAL ADVERTISEMENTS.

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For a long time the enlightened and honest people of Colorado have longed to read a home paper that put decency above income. A sometime editor of the Denver Times once revived this desire that was languishing from years of disappointment. He announced that his paper would be discriminating in the acceptance of advertisements. All fakirs and quacks of every kind and calling, all products that were exploited by obviously dishonest claims were to be denied space in that renovated daily. But virtue was expensive. It failed to bring forth readily and abundantly "its own reward" which in that ease was required to jingle as does real money. A brief and wavering effort toward righteousness proved irksome and weakening and The Times soon relapsed into its earlier policy of publishing anything that was paid for. It hadn't the power of sustained and sacrificing virtue. It should be commended, however, for this exhibition of transitory righteousness, especially

when one observes that so many other papers are completely anesthetic to this prick of the conscience.

The "Express" has been the most decent of Denver papers in this respect. Its manager has consulted the editor of Colorado Medicine and the State Board of Health concerning the truth of the claims of the promoters of the medical products advertised in his paper.

Recently Mr. John C. Shaffer purchased the "Rocky Mountain News," "The Denver Times," and "The Denver Republican." The two morning papers have been consolidated. The editor of this formidable combination has announced his intention of making his papers clean, of ridding them as soon as certain contracts expire of certain advertisements that are clearly misleading or indecent. Many people, not all of them in the medical profession, will watch with interest for the fulfillment of this promise.

One of the papers purchased by Mr. Shaffer was advertised as the "best breakfast food." There is no accounting for the tastes of some people. It is hard to understand how the bold reminder of "big G." salvarsan and that "ladies friend," the whirling spray could encourage one's appetite for oat meal and eggs.

Let those papers that will cater to the low intelligence of those who believe dishonest advertisements and to the depraved characters whose vicious conduct has entailed secret distress. We have now Colorado newspapers that are willing to forego the publication of those advertisements which have long polluted the fireside.

The progress of the "Express" and the promise of the "News" and the "Times" will be watched by the discerning and virtuous. These papers will, doubtless be encouraged, patronised and applauded according to their desserts.

### COME TO DENVER.

The Medical Society of the City and County of Denver has arranged for a popular priced dinner to be given on the evening of December 12. Dr. J. G. Adami, Professor of Pathology and and Bacteriology at McGill University has been invited to be the guest of the society and he has accepted the invitation. Dr. Adami will deliver an address upon "Hormones and Vitamines." The occasion promises so much intellectual profit that the society has decided to make the invitation to the meeting state wide. Write a letter to Dr. W. M. Wilkinson, Metropolitan building, and tell him that you are coming, so that he can make arrangements for a dining-room big enough to hold us all.

### GASTROJEJUNOSTOMY.

J. B. Deaver, Philadelphia (Journal A. M. A., July 12), insists on the importance of early operation in cases of perforated or duodenal ulcer. This, while infrequent, is sufficiently common for every active practitioner to meet once or twice in the course of his practice. During the last ten years he has had thirty-six cases to treat and it seems to him that they have been more frequent in the latter part of the period, probably on account of more accurate recognition. He therefore goes into the diagnosis at some length. The leading symptom is pain; the leading sign rigidity, and the leading clue is a history of previous indigestion of ulcer type. The pain is sudden and violent and this sometimes disqualifies the patient from being able to describe it. Rigidity sets in at once and extreme tenderness is also immediate. The absence of history does not preclude the perforation but its presence is of great value. Shock has been observed but is not essential and may be slight or transient. Vomiting is almost constant and a valuable symptom. Temperature, pulse and respiration rate are very misleading and do not indicate the urgency of the patient's condition. Free gas in the abdominal cavity and obliteration of liver dullness should be stricken out of the text-books as signs of perforation. The leukocyte count is of some help, chiefly in differentiating non-inflammatory conditions like gastric crises and abdominal angina. Deaver deprecates giving too much importance to it in the diagnosis. In treatment everything depends on promptness. If the perforation can be closed within

the first twelve or eighteen hours a considerable percentage of recoveries can be looked for even by an inexperienced surgeon. After twenty-four hours the case is almost absolutely hopeless. In the twenty-six cases operated on by Deaver there were eighteen gastric and duodenal ulcers and the only death occurred in the one case of over twenty-four hours standing. The treatment adopted was: (1) closure of the ulcer; (2) plication of the duodenum to obliterate its lumen and fortification of this area by covering with a gastrohepatic and the gastrocolic omentum; (3) posterior no-loop gastrojejunostomy and (4) tube drainage of the pelvis through a suprapubic stab. The after-treatment consisted in the sitting posture, continuous proctolysis, prohibition of everything by mouth until peristalsis was re-established as evidenced by auscultation and especially by the passage of flatus. The stomach-tube was employed freely for vomiting, regurgitation, or gastric distention. Experimentation with food was begun after the passage of flatus, beginning with albumin water. No purgatives were given, but a cleansing enema was given on the third day after operation. The results point to the value of gastrojejunostomy as a primary procedure in addition to the closure of the perforation in all but desperately toxic or shock cases and whenever the surgeon is sufficiently familiar with the operation to perform it. The slight prolongation of the operation is no contraindication and the danger of infection of the lesser peritoneal cavity has been overrated. The primary gastro-enterostomy puts the parts at rest and favorably influences existing ulcers. In duodenal perforation any narrowing of the lumen is compensated for by the anastomosis. In the future in early cases with but little inodorous fluid Deaver proposes to omit pelvic drainage. The remote effects are also equally satisfactory, but he reserves this feature of the subject for a future communication.

### SIR JONATHAN HUTCHINSON'S WILL.

Sir Jonathan Hutchinson left an estate of the value of \$460,000, the bulk of which is divided among his eight children. He wrote the following directions in his will: "I desire to be buried in the same grave with my late beloved wife, the inscription on the gravestone to be, in addition to the names and dates, 'A man of Hope and Forward-Looking Mind.'" He left his three museums, his clinical museum in London and his educational museums at Haslemere and Selby, to trustees to dispose of in their absolute discretion, but he stated his desire that they shall do so in accordance with his wishes expressed to them during his life.

### The Self-Prescriber.

Dr. Marcus Hez of Berlin once said to a patient who read medical books diligently in order to prescribe for himself:

"Be careful, my friend. Some day you'll die of a misprint."

## Original Articles

### BILE TRACT INFECTIONS AND THEIR CONCOMITANT CO- RELATED DISEASES.\*

L. L. McARTHUR, M. D.  
CHICAGO.

*Mr. President and Fellows of Colorado  
State Medical Society:*

In a weak moment I yielded to the flattering invitation of your secretary to address this great medical organization. Carried away by the honor thus bestowed, I first began to realize the difficulties of the situation, when the committee on program became solicitous as to the subject selected for presentation. Fuller realization comes as I approach you with the feeling that I may not be the bearer of a message after all.

\*At first glance the topic may appear trite; one in which the chapter has been closed, the last word written. Surely the work done by that galaxy of workers, Mayo Robsen, Moynihan, the Mayos and Kehr, has so systematized the operative technique, that but little remains to add to the surgical side of the equation. If I succeed in interesting you in some of the minor details of the after-care, or divert your attention from the main issue to some of the necessary complications met with during the course of a cholecystitis or choleangitis I shall have achieved my desire.

Permit me to briefly sketch in review the generally accepted data as to the nature of, and manner in which bile tract infections originate. This, preliminary to the intelligent consideration of the subject-matter to which I later desire to invite your attention.

Bile tract infections occur either through

(1) the blood stream, or (2) by an ascending infection of the common duct, with the vast majority of infections in the former class. Of the two blood streams entering the liver, the portal, from the very nature of things, is the one most liable to contain infective elements. Coming, as it does, from a tract laden with infective organisms, various in kind, uncountable in number, small wonder is it that some are borne along with the products of intestinal digestion to the liver. In health, their number not being too excessive, nor their virulence too great, the liver cells eliminate these organisms by way of the bile tracts: in disease the organisms may accumulate in such numbers or be of such virulence as to produce an inflammation of the lining membrane of these tracts with consequences with which we are all familiar. The nutrient artery only bears infective elements when there is a general systemic circulatory infection, as in pneumonia, grippe, pyæmia, miliary tuberculosis, etc.

Rare as they are, ascending infections are seen, the chief exemplars of which are acute catarrhal jaundice and typhoid cholecystitis. In these, as in all other ascending common duct infections, a *stasis* more or less complete of the bile stream is essential. That of the catarrhal jaundice being due to the obstruction offered by the swollen mucosa at the ampulla incident to the acute gastro-enteritis with which it is ever associated. That of the typhoid choleangitis and cystitis, due to the hepatargia, the analogue of which we see so frequently in the parotid gland in the same disease, with the flora of the mouth growing up the sluggish salivary stream within Steno's duct until the gland substance is invaded. Just as in the dry mouth of the typhoid, whose salivary gland has ceased to secrete, so in the common duct of the typhoid liver so slow a flow of bile takes place as to give the faint color to the typhoid "stool" and permits the growth of organisms upward

\*Read at the Annual Meeting of the Colorado State Medical Society, Oct. 7, 8, 9, 1913.



as well as the multiplication of the same organisms coming from above.

It is to some of the important changes which these infections make

- (1) in the bile itself,
- (2) in the bile tracts,
- (3) in the pancreatic ducts,
- (4) organs of elimination,

that I desire especially to direct your attention and to suggest therapeutic remedies.

#### *The Bile.*

As I have elsewhere said, on analysis gallstones consist of *cholesterin alone*, *bilirubin calcium* alone, or varying proportions of both with cholesterin usually predominating. While bile normally contains minute traces of cholesterin it never contains in health bilirubin-calcium. The *physiological chemist* has demonstrated the source of cholesterin to be in degenerative processes affecting cell protoplasm, columnar epithelium being that most prone to undergo this metamorphosis, hence the presence of cholesterin in various secretions, like those of the bronchi, the nose, the steatomata of the ear, the bile tracts, and in those neoplasms lined by columnar epithelium.

The *biologist* has demonstrated, experimentally, and the *pathologist* found by his research at necropsies, that the influences necessary to induce these degenerative changes are due to the protoplasmic poisons produced by somewhat *attenuated* bacterial organisms. When *such* irritants act on the epithelia the latter are found to undergo degenerative changes, with swelling of the cells, formation of myeloid bodies within the protoplasm, rupture of cell wall, discharge of contents and the subsequent appearance of cholesterin within the debris. Thus in the lower animals, by attenuated cultures of the colon bacillus introduced into the gall bladder, it has been possible to induce such changes in the epithelial lining as to increase the cholesterin content of the bile, with resulting cholesterin

stone formation. *Active, unattenuated* cultures of the colon bacillus, or staphylococcus, on the other hand, induce *inflammatory* changes with pus formation, precipitate bile salts but no stone formation, no cholesterin.

Bilirubin, the coloring matter of bile, a sulphur containing albuminoid derivative, is soluble in the soda salts of the bile. It is a product of the liver cell in health, not a degeneration product. Under certain conditions it may be precipitated with a calcium base, making the insoluble body, bilirubin calcium the other important constituent of the second group of gallstones.

These conditions, as in the case of cholesterin formation, are most often those of bacterial fermentative action, though conceivable as occasionally due to a pathologic condition of the hepatic secretions incident to age, poor metabolism or lessened alkalinity with precipitation of bilirubin calcium. The *source*, then, of bilirubin being in the *hepatic cells* themselves, the formation of bilirubin-calcium is rendered possible in the very smallest bile ducts. This type of stone is the one most frequently found intrahepatically and in the ducts. The source of the calcium base with which the bilirubin combines, when precipitated by bacteria, is yet a mooted question. Calcium salts exist in the bile normally, but normally do not combine with bilirubin. If however, bacterial fermentative changes be induced in the bile with consequent diminished alkalinity bilirubin calcium falls. Thus it will be seen bacterial influences are the determining factors of stone formation whether they be of *cholesterin* or *bilirubin calcium*. Of the former in the gall bladder and common ducts *chiefly*, of the latter in the intrahepatic ducts *probably*, in the gall bladder *possibly*.

We have thus far considered the source of the *constituents* of the gallstones, but have considered only one of the factors essential to stone formation, which, taken

alone will never produce stones. There must be the other factor, *stagnation* of the bile stream, either in the gall bladder, its muciparous ducts, or the bile ducts. If this be intermittent in character the stone will be laminated. It should be distinctly understood that stagnation alone, however induced, will not produce either variety of stone, but to it must be added a mild bacterial infection, so mild as not to induce inflammatory reaction in the lining of the tracts, but sufficient degenerative changes in the epithelial lining or a lessened alkalinity of the bile through a fermentative change in its constituents, or both. The stagnation may be inflammatory, neoplastic or in various ways mechanical, need not be continuous, must not be absolute. Since the flow of bile in the gall bladder is not as active as in the ducts, this is the site of the more frequent stone formation. It has been my privilege to present at the Portland meeting of the A. M. A. a specimen of a liver and bile tracts in which it was impossible to make an incision into the liver substance without exposing on the cut surfaces numerous stones lying in the lumina of the bile tracts in the exact spots in which they had developed, but in which case not a solitary stone was found in the gall bladder, although over 400 were removed from the common duct.

Until the present date the majority of us have been content in the treatment of infective processes of the bile tracts, whether complicated by stone or not, to establish a temporary biliary fistula, trusting to *simple drainage* to effect a cure of the cholecystitis, choleangitis or cholemia. While in the corresponding operative treatment of the urinary bladder infection, we have long used lavage with various medicaments associated with constitutionally administered drugs, we have been surprisingly slow to adapt similar methods to bile tract infections. This, in the light of the evidence now rapidly growing, and to which I take

some pride in having early directed attention, should be made to include several novel procedures.

Applying methods similar to those obtaining in the treatment of the urinary bladder, several interesting facts have been observed, some of the far-reaching influences of which I have had the gratification of having been accepted and endorsed particularly by Matas of New Orleans, the Mayos and my colleagues.

Beginning with the simple cholecystitis, for which drainage had been established, it was soon observed that the return to normal of the character of the biliary output could be distinctly hastened by daily lavage of the gallbladder; especially so, when in addition to this those antiseptics were given, which are, when taken by the stomach, to be recovered from the bile emerging from such a fistula. Through the experimental work of Dr. A. D. Bevan and Prof. W. S. Haines of Rush Medical College, it has been shown that amongst others the salicylate of soda, are thus demonstrable. Similarly urotropin appears. When to these we add those remedies which will pronouncedly influence the alkalinity of the portal circulation, and therefore the alkalinity of the bile excreted, we are acting up to the light we have. In but one other way can the alkalinity of the bile be more rapidly influenced than by rectal administration of enemata containing the true alkalies, sodium or potassium carbonate, for taken up by the portal radicles and passing immediately to the liver their influence is most pronounced on the bile and most beneficial to those mucous surfaces which it bathes. For the same reason alkaline lavage only is here appropriate, that in my hands having been hypotonic salt solution made mildly alkaline and antiseptic by sodium biborate.

While flushing such fistulae it was observed that part or all of the fluid frequently failed to return. Like the bile, it entered the duodenum. This suggested the

possibility of utilizing these fistulae for several novel purposes—(1) of rapid hydration of the system, (2) of systemic medication, (3) of feeding, (4) of stimulation—and to these Matas and the Mayos have made most valuable additions. So startling and so gratifying have been the results obtained that I feel justified in again recalling your attention to them, especially in the light of the new testimony to be found in the literature and the newer personal experiences.

#### *Rapid Hydration.*

If to the tube draining the gall bladder in an ordinary case of cholecystostomy we connect the tube of an irrigator containing for example sterile warm hypotonic salt solution, the rate of flow being graduated so as not to exceed five or six drops per second and the pressure not to exceed 20 inches elevation, a continuous flow into the duodenum can be established and maintained without discomfort to the patient. In this manner I have frequently introduced two, three or four pints of fluid, been assured of its absorption by the conversion of a small, feeble, wiry pulse into a full and bounding one; a dry skin into a moist, perspiring one, and so rapid an elimination of urine by the patient that complaint was made of loss of sleep because of frequent micturition!

Utilization of the *drainage tube in the gall bladder* for the purpose of hydration, renal flushing, stomach washing, etc., can be made immediately after the completion of the operation if, as is sometimes the case, it is desirable.

In the case of the drainage tube inserted in the *common* duct, when I called attention to its therapeutic possibilities five years ago I advised against using it until two or three days had passed, in order that the tract occupied by the tube could become sufficiently well walled off to prevent the irrigation fluid from leaking into the abdomen. Dr. Rudolph Matas of New

Orleans in his work along these lines demonstrated how easy it is, after the removal of the common duct stones, to insert and leave for weeks a soft rubber No. 4 or 6 catheter down the common duct into the duodenum several inches, and through it without hesitation or fear of its regurgitation, any desired amount of any fluid, food or medicament indicated could be given. In fact, in this manner, he has given, over a period of three weeks, diuretin, panopeptone, strychnia, castor oil, Carlsbad salts and Hunyadi water in purgative doses, to the great satisfaction of the patient, and with no untoward results because of its method of introduction!

Since trying his suggestion I have sometimes been bothered by the escape to the surface of bile around such a catheter left in the common duct and duodenum, because of the too snug fitting of the catheter in the ampulla of Vater. This can be overcome by inserting the usual rubber drainage tube into the common duct with its end directed *downwards* an inch or two, toward but not into the duodenum, the tube being *distinctly smaller* than the observed calibre of the common duct. Then, when it is desirable to introduce fluids directly into the duodenum, an ureteral catheter can be passed down through the rubber tube until it enters the duodenum for a considerable distance, and through this temporary catheterization of the duodenum, any form of medication can be made. After any tube has been in the common duct for three or more days, fluids will flow through it into the duodenum just as they do in the case of the gall bladder, but, as will be seen later, it is often during the first 48 to 72 hours that the urgent need obtains for the rapid introduction of remedies for the co-related diseases to the ideal position for absorption, hence the desirability in such cases of providing at the time of operation for



the immediate utilization of these possibilities.

### *Cholemic Nephritis.*

In chronic obstructive jaundice we frequently see an associated nephritis, probably incident to the toxic effects of the cholemia on the renal tissues. In just such cases, especially after an ether anæsthesia, there is imminent danger of a complete anuria. Under these very conditions it has been found possible to start up promptly an active renal secretion, fill up the blood vessels, slow the pulse, quench the thirst, induce active perspiration and wash out tissues stained with bile pigment. So thoroughly have my observations been confirmed by other operators that one of the more enthusiastic of them, Dr. Matas, has gone a stride farther with the most brilliant results. At the New Orleans meeting of the Society of Clinical Surgery in March he demonstrated a patient, a boy of 15, who, following an operation for septic peritonitis, had an alarming anuria which for many hours resisted all forms of treatment. Recalling the four lives he had saved by duodenal flushing in bile tract, diseases under gas anæsthesia, he quickly tied a tube in the gall bladder and through it began deluging the duodenum with French vichy, with the gratifying result of raising the urinary output from 1½ ounces in 24 hours to 14 for the first 24 hours and normal thereafter for the first week. At the end of the week, thinking it no longer necessary, he discontinued the flushing—with a marked falling off in the output. Resuming the flushing for another week, the boy was restored to health, the tube withdrawn and the temporary fistula closed spontaneously.

When such brilliant results attend the treatment of acute anurias, have we not a powerful factor added to our armamentaria? One caution is here worthy of emphasizing: namely, that those forms of

chronic nephritis dependent upon destruction of the filtering apparatus, the glomeruli with consequent retention of water and œdema of all the tissues, are not those to be benefited by the further addition of water, no matter how introduced, hence not to be benefited by the duodenal flush.

### *Vomiting.*

Through the use of fluids thus used it has been observed by William Mayo, myself and others, that the vomiting often following gallstone operations can be ameliorated and frequently checked, the regurgitation into the stomach soon becoming salty to the taste, free from bile and finally retained.

### *Peristalsis.*

Dr. Matas calls attention to the rapid restoration of intestinal peristalsis, so frequently observed after operations on the bile tracts to be interfered with on the expulsion of gas and early bowel movement. During the necessary loss of bile incident to the drainage much of the normal alkaline bodies of the intestinal tract is lost. There early appears in the reports of the patient an excessive acidity of the stomach. I have come therefore to add when instilling fluids into the duodenum a few grains of sodium carbonate. It is true this could be given by the mouth, but interference with stomach acidity interferes with stomach digestion, while increase of duodenal alkalinity improves intestinal digestion and restores the biliary secretion more nearly to that norm for which operative interference has been made necessary. Others have reinjected into the duodenum through the catheter the bile collected in the glove or other receptacle.

Let me pause here to state that I do not resort to bile tract medication in cases following a normal convalescence.

### *Pancreatitis.*

Bile tract infections sometimes have their most marked clinical manifestations in the extension up the *pancreatic* duct of

the same or similar infective elements. The realization of this fact has come from the great amelioration of the *pancreatic* symptoms when in operating for the pancreatitis, gallstones in gall bladder or common duct have been found and removed, the concomitant drainage relieving the stagnant fluids in the larger pancreatic ducts. In fact, one of the recognized treatments, as urged by Deaver is drainage. In this situation still greater aid to the patient can be given and more rapid recovery insured, if *alternate* flushing and draining of these ducts with appropriate fluids be instituted after the suggestions which have preceded. This calls to mind an observation with which all of us are familiar, but which we have not always interpreted correctly. Having exposed the bile tracts it has been customary, when no gall stones were to be felt in the gall bladder, to compress that organ, and if it emptied readily to conclude that the tracts were free of obstruction. The truth is, that with occlusion of the common duct sufficient to make an *icterus*, injection of one or two ounces of fluid can still be made into the ducts above the obstruction without experiencing the resistance which Fenger taught would be diagnostic of positive occlusion. This is due to the fact that the biliary tracts are capable of very considerable dilatation.

Again, if to the drain in the gall bladder or common duct we couple up two or three feet of tubing filled with fluid and then lower this below the level of the patient's bed, such a negative pressure (*syphonage*) is established as to empty the remotest biliary terminals. The practical application of this knowledge in *alternate flushing* and *syphoning* will be found to act beneficially, not alone on the bile tracts, but likewise upon the anastomosing pancreatic ducts, therefore, on the pancreatitis. Continuous use of such pronounced *syphonage* over a period of ten or more

hours has been observed to lower the blood pressure, probably through rapid loss of fluids.

Because of the unusual opportunities you in Colorado have, of treating tuberculosis in all its forms, it seems here appropriate to again refer to cases elsewhere reported, and repeat a suggestion I have as yet had no opportunity of trying.

Having demonstrated the curability of tuberculosis of the large gut, sigmoid, rectum and anus that had resisted for years treatment by the best qualified men, even in such ideal environment as Colorado offers, by the simple procedure of appendicostomy with appropriate lavage, it has seemed to me that similar results could at least occasionally be obtained, in appropriate cases, were the bile tracts utilized temporarily as the route of access for treatment. I realize fully that this will at first strike one as a severe surgical procedure to propose.

I believe most of you will agree that inserting a drain in the normal gall bladder, with a double purse string suture, is but little more difficult or dangerous than anchoring and catheterizing the normal appendix.

Considering the hopelessness of all known methods, justification for such a surgical interference should be found, in the light of the cases above referred to. The writer does not fail to appreciate the added difficulties and different factors entering into the problem of small intestine tuberculosis. Here both the digestive and absorptive areas are involved, requiring something more than the mere lavage and medication found so efficient in the large intestine.

Nevertheless, by a proper selection of time in relation to intestinal digestion and alkaline medicament to suit the alkaline secretion in this location, I am convinced similar results could be obtained. Moreover, forced feeding with fluid predigested

foods might here (far better than by stomach or rectum) make that change in metabolism and nutrition for which we are constantly striving when confronted by tubercular process. Again, in conclusion, I desire to urge upon the members of this organization to investigate for themselves when the opportunity offers some of the statements here made, and not to dismiss the subject with the false impression that the essayist has been carried by his enthusiasm beyond the bounds of sane surgery.

*122 Michigan Ave., Chicago.*

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ROENTGEN RAY DIAGNOSIS OF  
GASTRO-INTESTINAL DIS-  
EASES.\*

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SAMUEL B. CHILDS, M. D.  
DENVER.

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In no line of medicine or surgery has there been more rapid advance in the field of diagnosis than that afforded by the X-ray in gastro-intestinal diseases. The bismuth test meal of Rieder, in 1904, visualized the stomach and intestinal tract and it has been due to the untiring efforts and observations of many workers in this field, notably Haudek, Holzknacht, Riedel, Groedel and others abroad, and Cole, Pfahler, Case and many others in this country, that a working basis of the position, size, shape and motility of the stomach has been established and from this the pathological conditions that are daily demonstrated have been deduced.

To the untrained eye how wonderful and marvelous appears the motion of the stomach with each respiratory act, as well as the intrinsic wavelike movements that course down its curvatures. How much the deviations from the normal type of stomach both in position, motility, regularity of outline,

and many other particulars, as well as the various changes in the shape and lumen of the intestinal tract mean to the trained eye. What a wealth of information and valuable assistance is contributed thereby in helping to establish an accurate and early diagnosis in the benign and in the malignant diseases of the digestive tract.

There is no such thing as a normal standard stomach that will apply to every individual. Different types of stomach are normal for different types of individuals, and range from the type of stomach for the man physically fit to the type of the neurasthenic woman. As long as the stomach is functioning properly in each type of individual that peculiar form of stomach is normal to him. It is the discrepancies that occur in these various types that stamp them as abnormal or pathological.

The X-ray has changed our ideas as to the previously-conceived notion that the stomach was situated chiefly transversely or obliquely in the abdomen, for we now know that the normal position of the greater part of the stomach is mainly vertical, the pyloric end curving either obliquely or nearly vertically upward to about the median line of the body to terminate in the pyloric sphincter surmounted upon which is the "bishop's cap" or the first portion of the duodenum.

For the visualization of the stomach some preparation of bismuth, generally the subcarbonate or oxychloride, or the less expensive product, barium sulphate, is suspended either in one of the prepared milks or buttermilk or mixed with a certain quantity of cereal and cream. From 10 to 16 ounces are generally given for a meal.

The writer employs both the screen examination and plates and believes that each method has much to be said in its favor, but that a combination of the two gives us all the evidence that it is possible to obtain and at the same time puts us in

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\*Read at the Annual Meeting of the Colorado State Medical Society, Oct. 7, 8, 9, 1913.



possession of a permanent record of the ease. It is not the purpose of this paper to consider the various cycles or phases of peristalsis that are found in various stomachs, neither to discuss the classification of the different types of stomach, but rather to give the most reliable signs for an accurate X-ray diagnosis in various lesions of the gastro-intestinal tract and to cite a few cases to illustrate some of these conditions.

The first condition I desire to mention is gastropptosis. This term is so misleading that a few words of explanation seem necessary. A ptosis of the stomach as we ordinarily understand the word is impossible, for the cardiac end being firmly fixed to the diaphragm does not become displaced from this attachment; and as various types of stomach are normal to different classes of individuals so there are various levels to which the greater curvature of the stomach descends normally in different individuals.

The pyloric end of the stomach being more or less definitely fixed in position by the gastro-hepatic ligament, if the greater curvature of the stomach descends several inches below the level of the umbilicus due either to an atonic stretched condition of the musculature of the stomach wall, or possibly to some congenital defect, especially if it becomes adherent to any of the pelvic organs, we find the train of symptoms due to the atonic conditions of the stomach accompanied by a diminished motility producing delayed or faulty drainage, and probably aggravated by the reflex irritation of adhesions.

By a pathological gastropptosis then we understand a stomach descending low in the abdominal or even pelvic cavities, with stretched muscular walls and general atonic condition, associated with faulty drainage and the added irritation possibly of adhesions. This type of stomach is a true surgical condition and demands an op-

eration for the relief of its symptoms. The following case is of interest to illustrate this condition:

Mrs. H., aged 30, complained of pain in her back, also a fullness in the abdomen. She has had nausea and vomiting for the past six months and is unable to retain any solid food. There has been a great loss of strength and a loss of weight of 25 lbs. She was referred for X-ray examination, which was negative for ulcer or cancer of the stomach, but showed the stomach drawn down into the left iliac fossa and of water trap variety with imperfect drainage. An operation was advised. This was performed by Dr. Aubrey Williams, who found the stomach as described and also found a thick band of adhesions from the stomach to the left ovary. This was freed and the stomach fixed high in the abdomen. The pain, nausea and vomiting disappeared immediately and she rapidly regained her weight and strength and has had no return of any of her symptoms, although more than a year has now elapsed since the operation. See Fig. 1.



Figure 1. Stomach, water trap type, displaced downward into the left iliac fossa and fixed by adhesions. The arrow points to the level of the umbilicus.

#### *Ulcer of the Stomach.*

That stomach symptoms persist for a long time and are called by various names.

such as indigestion, nervous dyspepsia, hyperacidity, etc., until finally a serious hemorrhage or a perforation occurs, indicating the presence of an unsuspected ulcer, emphasizes the fact that the diagnosis of ulcer by the ordinary methods of clinical examination is oftentimes extremely difficult.

The X-ray is of great assistance in many of these cases and an accurate diagnosis can be made oftentimes from the X-ray findings alone. An ulcer, particularly on the posterior wall of the stomach, may be hidden by the superimposed bismuth column in the stomach and escape detection, or a superficial ulcer near the pyloric end may give none of the typical appearance upon the X-ray plate. Even here, however, while it may not be possible to locate accurately the ulcer, yet from the spasm of the pylorus, although the peristalsis is increased, we find a delayed emptying of the stomach which constitutes evidence strongly suggestive of ulcer.

The cardiac end of the stomach is probably the most unsatisfactory for an X-ray examination, on account of the slight amount of peristalsis in this area; yet here, as in the median portion of the stomach, the delayed filling of its lower portion, with the presence of an incisura, or deep indentation on the opposite curvature from that on which the ulcer occurs, or an exag-

geration of this producing a spasmodic hour-glass contraction, both due to a tonic spasm of the circular fibres of the stomach is diagnostic of ulcer. See Fig. 2.

Change in position and shape of the stomach, particularly when the stomach is drawn to the left, is suggestive of ulcer or cancer with probable adhesions of the stomach.

An increased peristalsis of the stomach, associated with bulging of the peristaltic wave, particularly, near the pyloric end of the stomach, is suggestive of ulcer of the pylorus with stenosis. When this has persisted for some length of time, providing the stenosis is extensive, the stomach becomes markedly distended and gives rise to the typical megalogastrium, in which condition the stomach extends into the pelvis and is capable of holding several quarts. See Fig. 3.

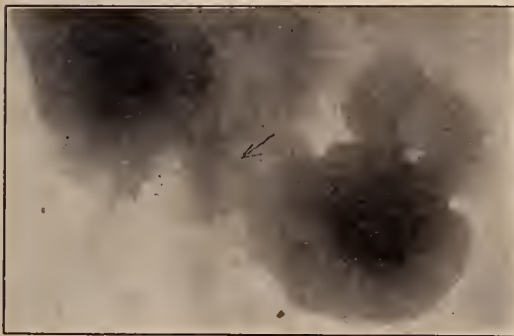


Figure 2. Spasmodic hour glass contraction of stomach caused by ulcer on lesser curvature at point indicated by arrow. Note the dilatation of the antrum and the displacement of the pyloric end to the right.



Figure 3. The arrow points to the ragged outline of the cap of the duodenum caused by an ulcer on its posterior surface. Verified at operation.

This condition is illustrated by the following case: Mrs. O., aged 28, has had stomach trouble for a number of years and within the past year has lost 45 pounds in weight; has been obliged to spend a considerable part of her time in bed, owing to weakness and frequent vomiting. Her skin was dry and sallow. The X-ray examina-

tion disclosed an almost complete stenosis of the pylorus, due to an old ulcer in this locality, and the residue at the end of six hours was nearly as great as directly after the taking of the bismuth meal. She was slowly starving to death. This patient was operated upon by Dr. Craig. Gastro-enterostomy was performed, and, although only a few weeks have elapsed since the operation, the patient has gained nearly twenty pounds in weight. It is in this class of patients where surgery accomplishes a rapid and brilliant result.

A valuable X-ray sign suggestive of ulcer of the stomach, when accompanied by the clinical manifestations, is the residue in the stomach at the end of six hours without any other demonstrable cause for same.

#### *Ulcer of the Duodenum.*

Ulcer of the first portion of the duodenum is more frequent than ulcer of the stomach, and it has only been within the past one or two years that the value of its diagnosis by the X-ray has been sufficiently recognized. Valuable articles on this subject have been contributed recently by Cole, Pfahler, George and Gerber, and others.

While the writer does not believe that certain characteristic X-ray appearances of the duodenum ordinarily attributed to ulcer are infallible, nevertheless, certain signs, when present, will demonstrate a definite lesion demanding surgical interference, whether this lesion be an ulcer of the duodenum, a chronic appendicitis, or adhesions associated with an infected gall bladder.

In acute ulcer of the duodenum, the stomach contents are evacuated in a much shorter time than normally, due to a relaxed pyloric sphincter, and varies from half an hour to two hours. When this condition can be demonstrated, associated with a persistent non-filled bismuth area in the cap of the duodenum, we have sufficient ground for the diagnosis of acute du-

odenal ulcer, especially when the clinical symptoms are suggestive of such trouble. In the more chronic forms of duodenal ulcer, we find a persistent ragged appearance of the cap, and, if the cicatricial contractions resulting from the ulcer are sufficient to produce stenosis, we find associated therewith, a delayed emptying of the stomach at the sixth hour period. See Fig. 4.



Figure 4. Megalogastrum caused by an extensive cicatricial contraction from an old ulcer of the pylorus. This plate shows the residue in the stomach at the end of six hours. For description of case see text. The marker to which the arrow points indicates the level of the umbilicus.

#### *Carcinoma of the Stomach.*

That cancer of the stomach is not recognized by the ordinary clinical means, until it is too late for anything but palliative surgical procedures, establishes the fact that there is great need of some agent to help in making an early diagnosis, and as our experience enlarges in the proper estimation of very slight changes in the stomach wall, so shall we be able to give very valuable aid in the detection of cancer at so early a date that its removal offers some chance for the complete eradication of the growth.

The appearance of carcinoma of the



stomach is characterized by a greater or lesser area, more or less irregular in extent, associated with filling defects of the bismuth meal; these defects are caused by the encroachment of the growth upon the lumen of the stomach, and, as emphasized by Cole, they look like finger prints, or are characterized by jagged, irregular edges simulating a moth-eaten appearance. See Fig. 5.

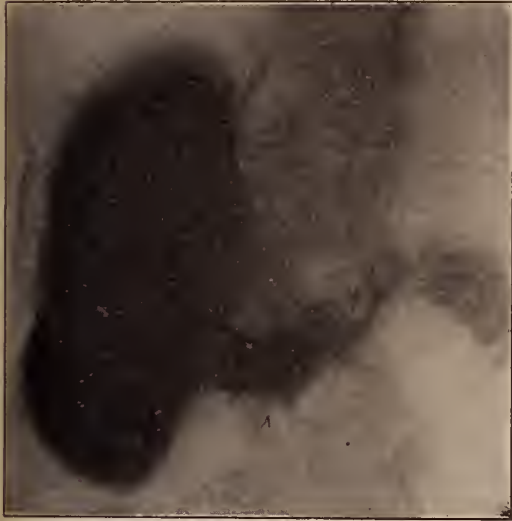


Figure 5. Extensive carcinoma of the lower half of the stomach. Note characteristic ragged appearance of inferior margin of greater curvature indicated by arrow. The arrow near the pylorus points to a typical finger-point indentation. Diagnosis verified at operation.

In an affected area of this sort the rugae are absent and no peristaltic waves are present. If the lumen of the stomach is not encroached upon by the growth, a constant appearance upon several plates of a certain fixed area, even without filling defects, but in which no peristaltic wave is present, suggests the strong probability of an early malignant process.

Although it is possible in carcinoma of the stomach to find no residue at the end of six hours, yet this is the exception; as the growth increases in size, the stomach may become contracted, so that it has the appearance of gradually tapering to the

pylorus and resembles somewhat the appearance of a stiff walled tube. See Fig. 6.



Figure 6. Extensive carcinoma of the entire stomach below the upper cardiac portion. Note absence of peristalsis and the contracted stiff-walled appearance of the lower half of the stomach. The arrow points to the ragged appearance on the greater curvature due to its involvement by the growth. Conditions verified at autopsy.

The theory advocated by Lane and others, that ulcer of the duodenum is probably caused by some kink in the intestinal tract, causing a stasis of the fecal contents, seems plausible, and is probably a very important factor in many of these cases. As in the case of the stomach, particularly in regard to its size and shape, so in the shape and position of the intestines, especially in reference to the flexures and kinks that normally exist, the X-ray gives very valuable information. It shows that the flexures are much sharper than we have been taught to consider them and that in many cases the transverse colon apparently sags to a lower level than we were wont to consider normal.

Before considering a kink of the intestinal tract pathological, certain characteristic signs must accompany this kink; i. e., constriction of the lumen of the gut, faulty position of the same as if drawn by some force from its normal locality, and; most important of all, a dilation of the gut proximal to the kink or a constricted area with delayed passage of the intestinal contents at this point. Given this appearance

just described upon the X-ray plate or screen, associated with the clinical history substantiating the locality, as well as the lesions found, we are justified in drawing the conclusion that the kink demonstrated is pathological and the case requires surgical procedures for its cure.

The writer recalls a number of cases in which, associated with the constipation that was present, the majority of the symptoms appeared to be those ordinarily associated with disease of the stomach, especially nausea and vomiting, but upon the removal of the adhesive bands, causing the pathological kinks in the intestine, the stomach symptoms have entirely disappeared and also the symptoms referable to the intestinal tract.

Ptosis of the intestine, particularly the transverse colon, unless it is apparent that this ptosis is occasioned by definite adhesions causing marked stasis of the fecal contents, should not be considered, ordinarily, a pathological condition requiring surgical interference.

Lane's kink with its dilatation of the distal ileum associated with the concomitant delayed passage of the bismuth meal through the duodenum and dilatation of the same caused by a sharp kink at the duodenal-jejunal junction are demonstrable by the X-ray and demand surgical relief.

Cancer of the large intestine is characterized by the presence of filling defects in the bismuth column due, as in the case of cancer of the stomach, to the encroachment of the growth upon the lumen of the gut.

Mr. A., aged 55, had been operated upon, a few months prior to the X-ray examination, for an infected gall bladder and appendix. His present illness began some weeks later with a feeling of oppression, particularly on the right side of abdomen near the region of the gall bladder. About twelve hours after eating a hearty meal, a thumping discomfort with a feeling of con-

striction was apparent in this region. As the patient described it he noticed a "sizzling" sensation in this area. These symptoms were relieved upon free evacuation of the bowels. Case referred by Dr. Eichberg. The X-ray examination, made fourteen months after the appearance of the first symptoms, revealed an extensive carcinoma of the hepatic flexure and the first part of the transverse colon.

At the operation, performed by Drs. Freeman and Eichberg, this condition was found and about 15 inches of the gut resected. One large mesenteric gland was also removed.

Case, Cole, Pfahler and others, by means of the X-ray, have detected gall stones in a number of cases. This has been made possible by the greatly-improved soft tissue detail now obtained upon the skiagrams due to the use of high power machines. The detection of gall stones depends largely upon the amount of lime salts deposited upon the surface of the stones, and as there are many cases of gall stones in which there is not a sufficient deposit of lime salts to cast a recognizable shadow upon the plate, a negative diagnosis of gall stones is valueless. The writer has had several cases in which the shadow of the gall stones has been distinctly shown. See Fig. 7. An enlarged gall bladder and ad-



Figure 7. The arrow points to a cluster of eight gall stones in the gall bladder.

hesions secondary to gall bladder infection can generally be shown.

In conclusion, the following deductions seem warranted:

1. The persistence of symptoms generally attributed to nervous dyspepsia, chronic indigestion, hyperacidity, etc., is due in the great majority of cases to some definite pathological lesion in the stomach or intestines and it requires all the means at our disposal to make an early and accurate diagnosis as many of them require an operation for their cure.

2. The X-ray is a most valuable aid in the diagnosis of the various lesions of the gastro-intestinal tract. The accuracy of the X-ray diagnosis depends, however, upon the ability of the operator to detect the deviations from the normal both as to the various phases of motility, as well as the position, shape and size of the organ examined, and then to correctly interpret these deviations from the normal. By this means a correct diagnosis can be made many times before the ordinary clinical manifestations of the condition are sufficiently apparent to warrant a definite diagnosis.

3. Radiography depicts the changes produced by ulcer and carcinoma of the stomach.

4. The appearance of ulcer of the duodenum may be simulated by adhesions from the gall bladder or a chronic appendicitis; but certain changes in its position, shape and size are diagnostic especially when associated with the characteristic clinical manifestations.

5. Cancer of the intestine gives positive signs upon the screen and the plate.

6. Adhesions and strictures can be demonstrated.

7. Ptoses and kinks can be found readily but should be considered pathological only when causing stasis with definite clinical signs referable to the suspected area.

8. The Roentgenological and the clinical manifestations in all diseases of the alimentary tract should be studied in conjunction and a diagnosis made from the combined findings.

*342 Metropolitan Bldg.*

#### DISCUSSION OPENED.

**Crum Epler, Pueblo:** Mr. President and gentlemen, I feel that I can add nothing to Dr. Childs' paper except commendation. I feel that if this paper was passed without at least favorable comment we would be treating the doctor almost with disrespect for valuable services which he has rendered us. This was not learned by the doctor in a day, nor a week, nor a month, but it was learned after many months and many years of study and experimentation, both day and night. It is hard work. The average physician who refers a case to the Roentgenologist for diagnosis has exhausted all the latter-day scientific methods of making a diagnosis, and he is thrusting them upon the man who handles a shadowgraph possibly the hardest duty which any of the consultants have to contend with.

It is, as the doctor has said in his summary, long continuous study, to say nothing of being acquainted with his equipment, and experience which he has gained by verification after operation in all these cases.

This has caused the doctor to come to these conclusions and tell you what he has told you, that one particular shadow indicates a carcinoma, while another particular shadow may indicate an ulcer of some particular part. It is a duty that requires a great amount of study, and for that reason I arise not to add to the doctor's paper except to add my appreciation for the work which he is doing.

Along that line I wish to call attention on to the work which he exhibited yesterday. He exhibited to us something that in all of your literature you will not find except you find it from the doctor's own pen. He exhibited work yesterday which has not yet been given to the public. That was work along the line of the normal kidney.

Possibly some physicians have had occasion to consult with their X-ray man to study the plates he has made, and after they have made this study they have been somewhat undetermined as to what it is trying to tell them. Why is that true? It is true for the simple reason that you arrive at your conclusions, or you should arrive at your conclusions, by a process of comparison with the normal, but the difficulty in this business is that we have not given enough attention, or at least as much attention as Dr. Childs has, to the normal.

Tonight he has shown a series of exhibits of different positions of the normal stomach, different positions of the normal colon, etc. This is a basis for comparison along those lines whereby we can recognize pathology.

The field for this work in the abdomen of



course is great—far greater, doubtless, than most of us appreciate—far more, I believe, than Dr. Childs himself appreciates, far greater than any of us have developed, or anyone else has developed, and in the next few years we will be seeing new things on the very plates which have been exhibited tonight and which we are making daily, that we are now overlooking.

I desire to mention the importance of the skiagraphic examination, both with the screen and upon the plate before I close, and that importance is this: By way of illustration I could give several instances in my own work, but I shall not, owing to the shortness of the time, have much to say. For instance, today there was a paper read on certain eye lesions due to autointoxication, by one of the members of my own county society—Dr. Thompson.

In the discussion my fellow-townsmen, Dr. Singer, recited a case which was referred to me for X-ray examination a case of autointoxication which had eye symptoms. We found a condition similar to that which Dr. Childs exhibited in one of his pictures tonight, and that was a mechanical constriction of the ascending colon, just above the ileocecal valve, due to adhesions. This patient before going to Dr. Singer had gone the rounds of a number of physicians in my town and some of the physicians in Denver for consultation. He had various diagnoses made upon him by different people, and there were about as many different diagnoses made as there were physicians. But until he came into the hands of a surgeon for some unexplained or unknown reason, this diagnosis of autointoxication and colonic stasis had been overlooked.

This was all verified by the operation of Dr. Singer and the patient made a beautiful, and, we hope, permanent recovery, having gained a number of pounds in the short space of time of sixty days; to all intents and purposes perfectly well.

In closing, I desire to say to Dr. Childs personally that for this excellent exhibit which he has given us tonight I thank him and express my appreciation.

**Charles D. Spivak, Denver:** We have certainly had a treat tonight. I think that this meeting will go into history as one that was very instructive. I recognize the great value of the Roentgen Ray in diseases of the stomach and intestines. Many a patient owes his life to Dr. Childs' assistance. I myself owe to the Roentgenologists a great deal of gratitude, because they have taught me a great many things.

I will not detail any of the histories of cases I have had. I will simply say that, whereas some two or three years ago I used to send a case to the Roentgenologist only occasionally, and would not think at all of the stomach, but direct my attention to gall bladder and kidney; but during the last year or so there is not a week that I do not send cases to the X-ray man. If all my cases were able to pay for the work of the X-ray man I think I would send even more frequently. In fact, I would send every chronic case of persistent stomach trou-

ble to the X-ray man. I expect that in the near future the X-ray man will be in requisition just as often as the pathologist.

We must teach the public to recognize this fact. The public and even, I regret to say, the general practitioner, look askance at the specialists. They consider them a sort of a trust.

A man sent to a specialist must go the rounds. The eye man will send him to the throat man, and the throat man to the surgeon and the surgeon to the Roentgenologist, and each of them will graft on the patient. It is our duty to enlighten the public and the general practitioner that in the majority of cases it is an absolute necessity to send them to the specialists, and that when a patient is sent from one man to the other it is because either one man or the other, or all of them together, will throw light on the subject. I think there is nothing so important to the recognition of disease of the stomach and intestines as the X-ray, and therefore it was a great pleasure indeed to be present here and to see the splendid series of photograms which Dr. Childs presented tonight.

**J. N. Hall, Denver:** I want to say a word in commendation of the pictures. Yet they would not do much good to one who was not skillful enough to tell what the different things on the plate meant, for we get an immense amount of help by skillful interpretation.

It is just such work as this that is going to change the statistics in the next ten years in certain hospitals. I do not believe here in Colorado we recognize how far ahead we are in that particular line of work of certain men in other states, where the trend of thought regarding digestive diseases runs rather to functional troubles than otherwise.

Let me give you an illustration. In one of the large eastern cities I had occasion by invitation to speak about the diagnosis and treatment of gastric and duodenal ulcer, within the last year. It came out in the discussion there that although that city was twice as large as the city of Denver, and has a number of men of prominence, and is a place where gastric diseases have been very faithfully studied, a number of men had had no operative work done whatever upon the stomach. One man who has written very extensively in a number of different treatises on medicine on the diseases of the stomach stated in a discussion that I heard, "that he had never yet seen a case of gastric ulcer which required gastric enterostomy—a most astounding thing." The difficulty is that in just such a clinic as that the two chief things in the armamentarium of the doctor are, in the first place, the stomach tube, and in the second place, a list of functional diseases as long as your arm.

When a man has a persistent trouble, as Dr. Childs has so well stated, we say that he has not a functional trouble, we say that he has an ulcer of the stomach, or an ulcer of the duodenum, or something of that sort.

There is no question that Moynihan is right when he says that "persistent sour stomach with acrid eructations is duodenal ulcer;" there is no use in discussing it under any other head-

ing. Those who have stood by the operating table in any of these cases will certainly come to that conclusion.

In verification of the statement that I have made may I tell what happened in the statistics of one of the great eastern hospitals? It is a hospital so well known that every man in the house would recognize that a great advance in medicine took place there sixty or seventy years ago if I should mention the name. I am rather humiliated at it in one sense, because I served a time in that hospital soon after I graduated in medicine. In that hospital in one year there were reported a certain number of cases of cancer of the stomach and a certain number of cases of ulcer of the stomach. This hospital has an enormous service, far more than that of all the hospitals in Denver combined. As to diagnosis, the total number of ulcers of the stomach was less than those which I had had verified by operation in my own private practice in the city of Denver! Now, no one can tell me they did not have ulcers of the stomach there. The trouble was that they named one hyperacidity and the next one acid ingestion and the next one functional dyspepsia and the next one gastralgia, and so on, and so on; they had a dozen different names for the same functional disturbance, and the thing at the bottom of it all was doubtless an ulcer in almost every case.

You cannot tell me that 32,000 patients can pass through a hospital of that sort and not show as many gastric ulcers as I found necessary to have operated in the course of the same year. The difficulty is they are not making the diagnosis.

Fortunately, one of the physicians of that hospital, a very competent clinician and I think perhaps the best teacher of medicine there is in the country, said to me one day following a discussion of the matter of the year before, "Hall," he said, "I kind of think you are right; I am seeing more cases of gastric ulcer than I used to."

There is no question about who is right. The man who has seen these things is a good deal nearer right than the man who has not had the belly opened and found out what was inside of it. The difficulty is that through the stomach tube one cannot tell what is going on half as well as with an X-ray examination such as we have had to-night to localize the trouble. When you get the ulcer between your fingers you know what you are talking about, if you have sufficient power of diagnosis to know what an ulcer feels like when it is between your fingers.

These men will be converted some day, or else they will not do their whole duty, and the thing that will do most to convert them will be just such work as this, which will show them the error which they have been making. They cannot stand up against the persistent presentation of such truth as to the organic nature of most of these chronic stomach diseases as we have had presented to us to-night.

#### DISCUSSION CLOSED.

Samuel B. Childs, Denver: I desire to thank

the society most heartily for the kindly manner in which they have received the presentation of the lantern slides and the paper. In the point that Dr. Spivak brought out about the expense of an X-ray examination, my answer is this: I have emphasized many times before this society and I wish to emphasize it again; I have been in this line of work for thirteen years, and I have never refused an X-ray examination to any patient, and I have never yet seen a patient who was too poor to have as careful an examination as could possibly be made upon any part of his body. (Applause.) So that the financial condition of the patient cuts no figure in having the work done. We all realize that we could not pay our own bills if everyone were that way, but fortunately there are plenty who have ample means with which to pay. I thank you.

#### THE PRESENT STATUS OF SALVAR-SAN IN THE TREATMENT OF SYPHILIS.\*

WM. C. MITCHELL, M. D.  
DENVER.

Four years have passed since Ehrlich gave salvarsan to the world. The first use of salvarsan clinically was in September, 1909, when Alt of Uchtspringe began some tentative work with a drug which Ehrlich had sent to him and which killed, in one injection, spirillum of relapsing fever in mice and had excellent effects on syphilitic rabbits. It is safe to say that no other single remedy in the history of medicine has received, in the same length of time, the attention that has been accorded to this remarkable chemical combination.

Coming, as it did, in so short a time, first, after the discovery of the *spirochaeta pallida* as the etiological agent of syphilis (1905, Hoffman and Schaudinn), and a little later the Wassermann reaction for syphilis, it was thus one of the trinity of agents which has illuminated this hitherto darkened subject and quickened to life a newer and better conception of the diagnosis and treatment of syphilis.

The accumulated literature on this sub-

\*Read before the Colorado State Medical Society, at Glenwood Springs, October, 1913.



ject is appalling when one attempts to review it, but certain salient features may be gleaned therefrom as an aid to the future use of this remedy.

No treatment of syphilis will be absolute or can be used to its best advantage without a complete knowledge of the life history of the *spirochaeta pallida*, and as our knowledge of the life history of this parasite is at the present time incomplete, so of necessity must our treatment be imperfect.

To me it seems that nothing more clearly demonstrates our lack of knowledge on this subject than some recent investigations of Noguchi, who, after finding *spirochaeta pallida* in the brains of 48 out of 200 cases of paresis, next attempted to cultivate these organisms. He obtained the brains of six paretics and inoculated portions of the same into rabbits intra-testicular. In the small induration which resulted from the injection of February 17, 1913, no *spirochaeta pallida* could be detected on March 25, April 10 or May 20. On June 6, however, the exudate contained an abundance of *spirochaeta pallida*.

In this connection it is of interest to note that Forster and Tomaszewski have succeeded in demonstrating *spirochaeta pallida* in the brain substance of living paretics by puncture of the frontal convolutions.

Not only are we handicapped for the present as to the life history of the *spirochaeta pallida*, but salvarsan is as yet by no means an open book.

Ehrlich, in a recent address before the XVII International Congress of Medicine, August 8, 1913, has given us an insight into the methods pursued in originating salvarsan, and has thus thrown much light on this subject.

That salvarsan acts directly on the spirochaets by combining with them and thus poisoning or killing them, is the ground-

work of Ehrlich's demonstration. There is no production of antistubstance or antibodies, but a direct fixation, a purely chemical process. Of course, from the dead bodies of the spirochaets there may be antibodies formed later.

By a series of ingenious experiments with trypanosomes and arsenic and different dyes, Ehrlich and his co-workers have shown that there are present in these parasites different specific chemo-receptors, e. g., an arsenic receptor which fixes the trivalent group of arsenic, an iodine receptor, a mercuric receptor and a great variety of other receptors. A complete, exhaustive knowledge of the different chemo-receptors of a definite parasite Ehrlich calls the *therapeutic physiology of the parasite cell*.

Just as in years past, Ehrlich showed that the molecule of toxin (either tetanus or diphtheria) was divided into two groups, a haptophore group which brought about its fixation to a cell, and a toxophore group which carried the actual poison and was thus enabled to penetrate and destroy the cell, so in these therapeutic remedies directed against parasites he has shown that there must be chemo-receptors (haptophores) which fit identical receptors in the parasites, and that, by this union, the toxophore, or poisoning group, may be brought to bear on the parasite cell and thus destroy it.

In other words the side-chain theory as applied to biological phenomena in times past has been brought forward and added to the case of these highly complicated synthetic drugs of which salvarsan is the head and front.

In attempting to construct such a remedy, one must proceed so that the chemo-receptors of the drug will have an affinity for the receptors of the parasites and none for the receptors of the cells of the body—be parasitotropic and not organotropic—for according to these views the various cells of the body and its organs also have



a great variety of chemo-receptors, just as do the parasites themselves.

As supporting these views, Ehrlich records the following interesting facts: With the introduction into animals of para phenylendimine only the summit of the diaphragm assumes a black coloring; vinylamin attacks only the cells of the renal papilla and cause them to die; cyanosin causes certain definite cells in regions of the hair and milk glands to be colored; pyronin causes a general dropsy in mice without injuring the kidneys but due to alterations in the vessels of the subcutaneous connective tissue. In all of which phenomena it is held that the only explanation can be that there are certain definite chemical connections which must be referred to a union of the chemo-receptors of the cells of the body with the chemo-receptors of the chemicals injected.

"Now, according to the above representations, all these fixations are dependent on the haptophoric grouping of the drugs, and, therefore, it was a matter of great interest to observe how phenylarsenic acid, the mother-substance of the modern arsenic compounds, behaves when various different groups are attached thereto. In this connection it has turned out that when we introduce different constituent fixation groups, *e. g.* chlorine, the oxygen group, the hydrocyanic acid group, the sulphuric acid group, the ammonia radical, we can manufacture, starting out from one substance, a series of combinations, the toxic effect of which may vary fifteen hundred-fold. The combinations which are to the greatest extent free from poison—these are derivatives of sulphuric acid, especially the sulpho-phenylarsin acid and its salts—are less toxic than sodium chloride, and on the other hand there are substances the very smallest quantity of which bring about death. And in this connection we can see

that according to the nature of the substances, very different organs of the animal's body are injured. Sometimes it is the intestinal tract and the animals die of profuse diarrhoea, sometimes it is the liver, and the mice—a rare occurrence—become jaundiced and die of serious alterations in the liver; sometimes the red blood corpuscles become dissolved and the animals die of severe anaemia. Frequently also the central nervous system becomes injured, and in the case of mice this usually relates to the vestibular nerve of the inner ear. The interference with the equilibrium, produced in this way, causes the mice constantly to turn in circles, just like the Japanese dancing mice. In the case of human beings, the optic nerve is the point of attack for numerous derivatives of phenylarsin acid. The cases of blindness which have been observed after the use of very large doses of atoxyl, arsazetin, and other drugs are due to this injury."

As to the therapeutic application of salvarsan, one should start out with a certain definite plan of action. The haphazard giving of a dose of salvarsan now and again is conducive of very little permanent good. Syphilis is one of the diseases, as Ehrlich well says, to which the old adage of strike quickly and strike hard pre-eminently applies, and particularly is this true of the primary stage of the disease. It has been demonstrated that salvarsan is a definite spirillicide; it kills quickly, differing from the slower repressive action of mercury. So that the time to apply salvarsan is at the earliest possible time in the infection. Swift and Ellis, Dexter and Cummer and Post lay particular stress on its earliest possible use. To this end, every suspicious venereal sore should be promptly submitted to a microscopical examination for the spirochaeta pallida. One should not even wait for the Wassermann reaction at this stage of the game, as a positive Wassermann reaction does not occur until the

fifth to the eighth week after infection, and a gain of a few weeks' time here may mean the difference of a year's treatment.

Neisser demonstrated that the hematopoietic organs of monkeys which have been inoculated with *spirochata pallida* become virulent at the time the Wassermann reaction became positive in these animals.

This demonstration of the early and general invasion of the system gives us a newer and better understanding of the infection of the body at large, and points the way for therapeutic application. With the spirochaetes localized in one or more superficially placed chancre the action of the drug is much more swift and certain than when these *spirochata pallida* are scattered throughout the system, where it is easier for them to intrench themselves and maintain a long siege against any form of treatment.

It is only when a case is seen thus early—and a definite diagnosis made by the finding of the *spirochata pallida* and while they are localized and not systemic that one may apply salvarsan as in the original intention of Ehrlich's *therapia sterilisans magna*, and even then one must not be content with a single injection, as was at first thought, but give at least four or five in as quick succession as is warranted. It is possible that a radical cure of syphilis may thus be accomplished in two to three months, but it is of course much safer to supplement this treatment with mercury. In my own experience I have had two cases in which the *spirochata pallida* were demonstrated before the Wassermann reaction was positive. Each of these cases received four intravenous injections of salvarsan at from twelve to fourteen days' interval. Neither case has developed a sign or a symptom of syphilis, and the Wassermann reaction has remained negative in the one case for two years and in the other two years and three months. Neither of these cases were given

mercury—but if I were to treat again two similar cases the salvarsan would have been followed by a vigorous mercury treatment.

In the treatment of the *secondary stage* we must remember that the *spirochata pallida* are now scattered throughout the system, giving rise to all the various constitutional symptoms and localized signs of this stage of the disease—and while in many of these lesions the *spirochata pallida* may be quickly reached and easily killed by salvarsan, yet in other instances, as in the eye or nervous system, the spirochaetes may easily escape superficial sterilization of the blood, such as one or two injections of salvarsan might give, and thus lay the foundation for relapses.

Boos, Fordyce, Swift and Ellis and Genierieh are all agreed that in this stage of the disease an intensive treatment is of the greatest moment to the patient. The consensus of opinion being that from five to seven intravenous injections of salvarsan at ten to fourteen days' interval should be given. This to be followed by a course of mercurial injections (10-12) and finally another series of intravenous injections of salvarsan. This method of treatment might be called one, as it were, of *fractional sterilization*, and from a study of the biology of the *spirochata pallida*, it appears to be the one best suited to cure the patient.

This plan of treatment is also applicable to the *tertiary stage* of syphilis, and as the *spirochata pallida* may be deeply intrenched in the tertiary lesions, pot. iodide is particularly indicated between the injections of salvarsan. Fordyce recommends ten or twelve injections of salvarsan and several courses of mercury, the treatment to extend over a year's time. Boos draws particular attention to the perniciousness of giving one injection of salvarsan, a little mercury by the mouth, and again at some later indefinite time a repetition of the dose of salvarsan as being

liable to develop later a latent refractory syphilis. In this connection an observation made by Post is of great interest as showing the value of salvarsan in the treatment of cases that have grown refractory to mercury and potassium iodide. He states:

"Yet there are certain cases which are resistant to mercury and the iodide, no matter how used—cases which have deservedly acquired the name of mercury-resistant. These are the cases which persist in spite of all that can be done, improving for the moment, only to relapse, until finally a hopeless condition is reached to which death is preferable. In no class of cases are the results from salvarsan more brilliant; they are like a recall from the grave."

In some of the cases which have come under my care, and which, under mercurial treatment have had a persisting weakly positive Wassermann reaction, the reaction has been changed by four or five intravenous salvarsan injections to negative.

#### *Syphilis of the Nervous System.*

Practically all observers are agreed that the so-called neuro-reedives are quickly cured by salvarsan. Boos states that neuro-reedives are an indication of insufficient treatment, and Myers states that salvarsan promptly causes them to subside. In the chronic or late manifestations of syphilis of the nervous system, as tabes and paresis, opinions are at variance.

The demonstration by Hoffmann and by Nicholls and Hough, of living spirochaetes in the fluid of the cord, and by Noguchi of living *spirocheta pallida* in the brain, has thrown new light on the biology of these diseases, and consequently has altered our conception of the treatment. The experiments of Nicholls and Hough are particularly valuable, as they show the possible early involvement of the nervous system in secondary syphilis and of the prominent

part this infection plays in the neuro-reedives.

Collins and Armour report a series of thirty-six cases of tabes treated with from one to six injections of salvarsan with marked and striking improvement; pains were mitigated or relieved, weight increased, and the ataxia improved in nearly every case. In two cases the pupils hitherto unresponsive to light regained their activity. The cytologic examination of the lumbar puncture fluid also showed marked improvement—as did also the globulin contents of the fluid.

Numerous other observers have reported good results, and also many failures have been tabulated. Those giving unfavorable reports have usually been those who have not given many injections of the drug. It would seem that those cases of tabes which give a positive Wassermann reaction are the ones in which an active campaign of treatment is indicated, as here the *spirocheta pallida* are still virulent and are carrying the disease deeper into the patient's vitals. Nearly all observers are agreed that the lymphocyte count is much improved following salvarsan, and yet a remarkable circumstance is that arsenic has almost never been found in the spinal fluid following these injections.

The fact that the cerebro-spinal fluid is as clear as water and almost wholly free from cells and albumin is accounted for by the reason that the cells by which it is secreted are in a high degree impervious to most of the constituents of the organism, *e. g.* albumin, and that they permit only a limited quantity of substances with small molecules to pass through (Ehrlich). Drugs with more complex molecules are, like albumin, thus excluded from the canal.

Swift and Ellis, N. Y. Medical Journal, 1912, have attempted to obviate this difficulty by the ingenious procedure of giving a patient salvarsan intravenously and an hour afterwards withdrawing some blood



from the vein. Serum is taken from the blood and inactivated at 56° C, diluted to 40% with normal saline and injected into the spinal canal.

Results up to date have been very encouraging.

#### *Injurious Effects and Fatalities Due to Salvarsan.*

If certain rigid lines are followed with reference to salvarsan, the injurious effects of salvarsan may be reduced to almost nil. Thus in opening the vein for the intravenous injection, if one is careless either during or after the operation, a thrombus formed at the vein may be carried onward and give a fatal result. If salvarsan is used instead of neo-salvarsan the neutralization must be carried out with care. Ellis quotes Keyes as reporting a death following an intravenous injection of 3/10 gram of salvarsan in acid solution, the other half of the 6/10 gram vial being given to another patient in alkaline solution with no ill effect.

Corlett gives us the interesting information that up to November, 1912, there had been approximately 600,000 vials of neo-salvarsan and 3,000,000 vials of salvarsan sold, with, as nearly as could be computed, 200 deaths, or one death to every 2,000 injections.

Apart from those deaths which may be classified as due to the carelessness in the technique of preparing and injecting the fluid, the consensus of opinion seems to be that there is occasionally an actual arsenical poisoning of the system.

Any organic fault in the patient which would tend to prevent the prompt elimination of the drug, as kidney trouble or cirrhosis of the liver, would predispose to this untoward effect, as it would seem that any undue retention of the salvarsan in the system may alter this highly complex synthetic drug so that the haptophore receptors are changed from spirillatropic to organotropic.

A few of the severe disturbances or even fatalities are ascribed to the Herxheimer reaction, which simply means an edematous or inflammatory process consequent upon the destruction of the *spirochata pallida* and a liberation of its toxins. Such an edematous or inflammatory process would be of no moment in the skin, for example, but might become of the gravest import if occurring in certain portions of the cranium, particularly in reference to the eye or ear.

In the opinion of the writer, however, and after weighing many sides of the question it would seem that with the proper technique and with a judicious selection of patients, and what is equally as important, of a dosage of salvarsan commensurate with the physique and weight of the patient, salvarsan may be used with the same propriety as anesthetics or diphtheria antitoxin.

From this very imperfect review of the subject we find:

1. That in salvarsan we possess a remedy as applied to syphilis that is without any question a specific spirochaetal poison

2. That in view of the recent knowledge of the biology of the *spirochata pallida* by which we find that in some cases they enter early in the secondary stage under the protection of the cerebro-spinal fluid where they are largely immune to the application of therapeutic agents, and, when they may cause later in life changes of the gravest import to the patient's life or reason, it becomes the bounden duty of the medical adviser to attempt, at the earliest possible moment, to make a diagnosis of every venereal sore by a demonstration, if possible of the *spirochata pallida*, or failing in this, an early examination of the blood with the Wassermann reaction. It is only by such means that we may accurately follow the advice of Ehrlich, to strike quickly and strike hard, and that at this

stage of the disease, salvarsan is the drug with which to do the striking.

3. That salvarsan does not replace mercury, but is rather a new and powerful congener, and that the best results are obtained by a unity of the time honored remedy of the past and the new synthetic compound of a modern miracle worker.

#### DISCUSSION OPENED.

**Philip Hillkowitz, Denver:** Dr. Mitchell has given you a very able exposition of the principles involved in chemotherapy which, first used in the treatment of syphilis, is now being experimentally applied to other diseases. Instead of the hit-and-miss procedure of the old empiric era, chemotherapy consciously directs its aim at the cause of the disease, with the parasite as the target.

As regards the treatment of syphilis with salvarsan, I do not consider myself competent to discuss this important subject. It is not within the province of the laboratory diagnostician to treat disease. It is true that the laboratory man is occasionally called on by the practitioner to give an intravenous injection. His rôle is entirely analogous to that of the pharmacist in the compounding of a prescription. The administration of salvarsan has been forced on the laboratory worker originally because in the preparation of the solution a certain degree of expertness was required in the addition of acid or alkali to obtain the proper reaction. Now, however, with the use of neo-salvarsan, and the increasing familiarity of the general practitioner with the technic of intravenous injections, the administration of this remedy is gradually returning into the hands of those who can best observe and interpret the manifold symptoms of lues, i. e., the syphilologist and the general practitioner.

Permit me, however, to make a few remarks on this subject which are the embodiment of opinions that I have heard time and again from the lips of the genito-urinary surgeons and dermatologists with whom I come in contact. We know now, as Dr. Mitchell has so well pointed out, that salvarsan is not the *therapia sterilisans magna* that was aimed at by the father of chemotherapy. Unfortunately its supposed miraculous cure with one dose has been over-exploited in the daily press, and the impression is still current among the laity, and to some extent among medical men, that "606" will cure syphilis, if not in one dose then with two or three or four injections, and without the aid of any other remedy. There is no question that up to the present time there has been no drug to equal salvarsan in its immediate effects, and in the removal of symptoms, particularly in early cases; yet it cannot be too strongly emphasized that syphilis is to be treated exactly as it has been heretofore, that the case is to be watched for as long a period as in former times, and repeated Wassermann reactions

made at regular intervals should determine the permanency of the cure.

In this respect I am simply voicing the sentiments of men who have had a great deal of practical experience in the treatment of syphilis, and who feel very strongly on this subject of indiscriminate dosing with salvarsan without keeping the patient under systematic observation and treatment. It is very probable that on account of insufficient therapeutic measures we will have, after the lapse of ten or fifteen years, a great number of cases of tabes and paresis filling our state institutions whose lamentable condition will be the fault of those who had depended entirely on salvarsan.

I am pleased to hear Dr. Mitchell likewise emphasize the necessity of the use of mercury in conjunction with salvarsan.

**A. J. Markley, Denver:** I was unfortunate in not being present at the beginning of Dr. Mitchell's paper, and what I shall say of course will have no reference to it, but merely express my own views as to the efficacy of salvarsan and its present relation to the treatment of syphilis.

My own opinion is that the great weight of authority has never been directed along more improper channels and has never brought about more damaging results than has the great authority of Ehrlich and of many other laboratory men who are working upon the diagnosis and treatment of syphilis.

I would venture to say that up to the present time the use of salvarsan has been productive of a great deal more harm than it ever has been productive of good. I am not decrying it at all. The advantages of salvarsan I am keenly aware of; there is no drug that has ever been devised, no drug that has ever been introduced into our therapeutic armamentarium that is more capable of producing symptomatic benefits in any disease than is salvarsan in its present-day application to the treatment of syphilis. It is a marvellous symptomatic remedy. Dr. Mitchell has pointed out that in the early cases, by the destruction of the spirocheta in the initial lesions it is perfectly possible to bring about, as far as we can bring about, a cure of the disease, by the repeated introduction of salvarsan intravenously into the system. In secondary stages I question very much whether salvarsan alone will ever bring about a real cure of the disease. Dr. Mitchell has not said that salvarsan alone would cure in the secondary stages.

The great fault that I have to find up to the present time with the laboratory man is that he does not come intimately into contact with the patient. If there is any disease which comes under our observation in which the therapist and the clinician are absolutely necessary, it is in the treatment of syphilis.

The syphilitic leans upon his doctor, I believe, more than the patient suffering from any other illness; he depends upon him; he is going to him constantly with little ailments which he ascribes to his disease, which possibly may not be due to the disease at all. And



if there is any disease in which one should be intimately and closely aware of and acquainted with all the clinical manifestations which it may produce, that disease is syphilis.

I claim definitely, therefore, that the treatment of syphilis should not fall into the hands of the laboratory man. It is definitely a clinical problem; it belongs definitely in the hands of the clinician.

As I have observed, up to the last few years, the laboratory man has been very prone to have the patient sent to him for diagnosis, either the diagnosis by the microscope or by the Wassermann test. He has been very prone to give the patient one or two or three or four doses of salvarsan and dismiss him, and say to him, I think you should take some mercury. Now, the mere taking of mercury is in itself quite a problem, and many patients have gone out and taken mercury by the mouth with no benefit to themselves, and I believe the giving of protiodid pills only is just as productive of harm as the indiscriminate giving of salvarsan. Mercury to be efficient must be given in intensive courses and in an intensive way.

Dr. Fordyce, one of the foremost authors on syphilis in this country, has said in this connection just exactly what Dr. Hillkowitz has said about salvarsan, that protiodid pills have gone far towards filling our present-day asylums with tabetics and syphilitics, and I would like to voice my approval of the statement that Dr. Hillkowitz has made, that the next twenty or twenty-five years will see our asylums and sanitariums for nervous and mental diseases full of derelicts and wrecks sent there by too much faith, too much reliance upon salvarsan and by its improper and injudicious administration.

#### DISCUSSION CLOSED.

**William C. Mitchell, Denver:** I think Dr. Markley's suggestions are in keeping with the subject. I think that salvarsan is to be used in the very earliest primary stages. In the later stages, five or six or seven or eight injections of salvarsan should be given and these followed up with mercury later and the mercury preferably given in the muscles.

I should like to say just a word in reference to the use of salvarsan in other diseases besides syphilis. As you know there is a disease in the tropics of Africa called frambosia or yaws which is due to the presence of spirochetes, and this disease has very much in common with syphilis. It has an initial lesion which is caused by the spirochetes, and there are also severe constitutional symptoms; no gummata, however, are formed. One injection of salvarsan sterilizes the system of these organisms. Ehrlich is authority for the statement that a hospital which was established in Africa and which continually had 250 cases of frambosia has been closed. Practically one dose of salvarsan was given to each case. The hospital has been turned over to other business.

Chronic cases of malaria, refractory to quinine, have also been promptly cured by injections of salvarsan in the veins.

#### PRESIDENT'S ADDRESS.\*

JOHN A. BLACK, M.D.  
PUEBLO.

The twentieth century is destined to take its place in history as the century of reforms; especially marked by reforms in statecraft, reforms in the religious world, and so pleasingly stated the uplift of the human race. It is one of those epochs that follow after the strenuous efforts for gold, which shatter religious morals and destroy society. We, as physicians, not only owe it to society, but also to our calling, as guardians of public health, to be in the vanguard in all things that will lessen human suffering. That the medical profession is keenly alert to its duty there is daily proof. That adverse criticism does not deter the efforts of the medical profession is daily demonstrated. That our efforts are highly appreciated we have daily evidence. The people look to the medical profession to deliver them as far as possible from the ravages of disease. We are today fully doing our duty in almost everything save one. That we have been negligent toward the public regarding syphilis in days gone by, and stand condemned in our own opinion for this seeming neglect, there is no doubt.

The forward movement against tuberculosis, begun by the profession, has gone on until we may say the entire civilized world understands the methods of prevention. All other communicable diseases have been brought to bay. Why permit this dreadful disease longer to afflict the human race, without raising the all powerful influence of our profession to stamp it out. We see the awakening of the profession at last to its duty. One cannot read the masterful essays of the late Prince A. Morrow, without a feeling of desire to throw

\*Read at the Annual Meeting of the Colorado State Medical Society, Oct. 7, 8, 9, 1913.



his whole energy on the social and moral side of the crusade. By the eradication of syphilis more could be done for the human family than by the eradication of all the other infectious diseases combined.

We know the anxiety of the mother for the rearing of a healthy child. But does she go far enough back to determine that her child shall be healthy? This little paragraph from the late Dr. Morrow may cause her food for reflection.

"No disease has such a murderous influence upon the offspring as syphilis; no disease has such a destructive influence upon the health and procreative function of woman as gonorrhœa. Since the welfare of the human race is largely bound up in the health and productive capacity of the wife and mother, the sanitation of the marriage relation becomes the most essential condition of social preservation.

"Who are responsible for the introduction of venereal diseases into marriage and the consequent wreckage of the lives of innocent wives and children? Not, as a rule, the practised libertine or the confirmed debauchee, but, for the most part, men who have presented a fair exterior of regular and correct living—often the men of good business and social position, not infrequently what are considered the 'good catches' of society—the men, who, indulging in what they regard as the harmless dissipation of 'sowing their wild oats,' have entrapped the gonococci or the germs of syphilis. These men, believing themselves cured, it may be, sometimes even with the sanction of the physician, marry innocent women and implant in them the seeds of disease destined to bear such fearful fruit."

What a reproach upon our health departments and sanitary bureaus, when it is said that venereal diseases are entirely ignored by our sanitary bureaus in the registration of contagious diseases. Morrow says:

"Nearly thirty per cent of all venereal infections occurring in women in private

practice in New York are communicated by their husbands. The same may be said of venereal morbidity in general. Its prevalence escapes recognition and must always remain an unknown and unknowable quantity. This is due largely to the shameful character of the disease in popular estimation and its difficult and baffling character as a sanitary problem. Venereal diseases are entirely ignored by our sanitary bureaus in the registration of contagious diseases."

According to Neisser, gonorrhœa is the most widespread and universal of all diseases in the adult male population, embracing 75 per cent or more. The prevalence of syphilis, though not nearly so universal, is variously estimated at from 5 to 18 per cent. Venereal morbidity is higher in large centers of population than in rural communities. As regards the extent to which syphilis prevails in married life, Fournier's statistics, embracing only those cases in which the origin of the infection could be definitely traced, show that 20 per cent of all women suffering from syphilis have been conjugally contaminated. It is claimed that syphilis is responsible for 42 per cent of all abortions and miscarriages which are not induced by artificial means or the result of foeticide.

An analysis of these statistics taken from all quarters and irrespective of the social conditions of the parents, show that when both parents are infected the mortality is 68 per 100.

In private practice the mortality is 60 to 61 per 100.

In public hospitals, and more particularly those frequented by prostitutes, the mortality reaches from 84 to 86 per 100.

It is well known that the mortality of hereditary syphilis is influenced by social conditions, by the age of the diathesis, and by the circumstance, whether one or both parents are infected. In the first year of married life the mortality reaches its max-

imum. Fournier's personal statistics show that 90 women infected by their husbands become pregnant in the first year of married life, which he terms "l'annee terrible" from the point of view of heredity; 50 of these pregnancies terminated by abortion or the expulsion of dead-born infants, 38 in the birth of children which soon died, 2 in the birth of children who survived. Fournier gives a further series of statistics, all taken from the most authentic sources, where syphilis has practically extinguished in germ the posterity of certain families. One table gives, out of 216 births, 183 deaths; another, out of 157 births, 157 deaths, or a mortality of 100 per cent.

Fournier relates the following example: "One of my patients who had already had three miscarriages, of the cause of which she remained ignorant, brought into the world a syphilitic child, which soon died, but whose disease was a revelation for her. 'Never,' she said to me one day in her chagrin, 'will I pardon my husband for the four children I have lost through his fault?' Some time later, when she had certain specific accidents, I endeavored to have her take a treatment which was repugnant to her, insisting upon the utility of this treatment for the children she still might have. She responded with the greatest indignation: 'What affront you put upon me, doctor! How can you believe that I am destined to again have children of a man who has killed four? This man is, and will be, nothing to me. Do me the honor, if you please, to consider me a widow.' That was ten years ago, and she has kept her word."

Can there be anything lacking in these foregoing quotations to show the destructiveness of syphilis? What a lack of courage that for generation after generation this condition has been allowed to exist. Is there any more scathing arraignment of the duplicity of man than the words quoted

from that poor unfortunate woman? Yet is there a practicing physician today but can relate other cases just as sad. The doctor has kept the secret, but destruction of the human race from this malady has gone steadily on.

The following clipping copied from the Philadelphia Telegraph of July, 1913, is interesting reading: "Not so long ago in a Russian village, according to a foreign news dispatch, several members of a large family died within a few weeks. The survivors believing that the head of the family, who was the first to die, had returned and was preying upon his relatives as a vampire, disinterred his body, cut off the head and drove a stake through the chest by way of laying his unquiet spirit."

Strange reading, surely, in such supposedly enlightened times as these in which we live; the remains of a very ancient and very persistent superstition. Yet it is natural enough that a primitive people should with rude logic imagine a supernatural being to account for catastrophies otherwise unexplainable.

The vampires which strike men down in civilized as well as primitive communities we know to be certain well-defined diseases—the tuberculosis vampire, the cancer vampire, and most insidious of all, that crouching shape whose very name, until recently, could not be breathed above a whisper—the vampire syphilis. All these take their toll of humanity, and against all of them the forces of science and humanity are waging an ever mightier conflict.

We have the advantage over the Russian peasants in that we know our enemies and what we have to fight; and that their extermination is so important it behooves every man to take part in the warfare. Cancer has so far resisted the efforts of science, except in its earlier stages, but the other two enemies have been in a measure conquered.

"The facts remain," says Isador Dyer,

in regard to syphilis, "that the disease has spread systematically along the avenues of civilization and colonization and that the least affected are those districts and countries most remote from large centers of population. The efforts to treat syphilis, together with the natural progress of the disease to self-limitation, have resulted in a general immunization in those countries where the disease has for long prevailed. At the present time the profound evidences of syphilis occur in country districts, and in new territories where the disease is more recent. The by-effects, however, as expressed in late nervous affections and in the evidence of hereditary influence, are constantly on the increase; and the insane asylums everywhere are burdened with the victims of this disease, either suffering the penalty of their own sins or the transgressions of their ancestors."

The estimate of the prevalence of syphilis can only be comparative, as any statistics must be inadequate and inaccurate with a condition which is so often concealed by the physician who may have occasion to treat it. It may be said, companies and corporations where health and wealth are necessary factors, have given this the most careful study. Insurance companies have contributed largely to the study of the incidence of syphilis and its relation to longevity; and in the past twenty-five years the actuary tables of these companies have been almost the only reliable basis for a study of syphilis in relation to the economics of human life, as compared with other diseases.

In the absence for any known basis of estimates of the occurrence of syphilis, certain syphilographers have drawn conclusions from the limited observations of those who have made records of such cases and who most often meet the disease. Some years ago one of these (the late Dr. Hyde) estimated that about 18 per cent of the people of the United States were syphilized.

Accepting this estimate, hypothetically only, the figure is appalling enough to demand a wider interest and broader knowledge of syphilis among the public than has hitherto been obtained. A peculiar fact is that asylums and other institutions for the care of the insane have very meager records on these points.

Ravogli, of Cincinnati, gives the statistics collected from the Ohio public institutions: In Cleveland asylum for the insane were fourteen men and two women affected with insanity caused by syphilis. In the Athens asylum for the insane only one was insane from venereal disease, but twelve were affected with epilepsy. Many cases of insanity are ascribed to bodily disease, hereditary influence, congenital defects; syphilis is not mentioned. From the report of the Board of the State Charities of Ohio it is found that in the different asylums and infirmaries of the state there were five hundred and forty-nine epileptics, six hundred and forty idiotic and one hundred and forty-one deformed. It is not difficult to see that epilepsy, idiocy and deformities are usually the work of syphilis, due to hereditary or congenital transmission. This population of epileptics, idiotics and deformed constituted an element which was distributed in the different institutions of the state and was in custody as paupers. All these infirmaries and asylums entailed an expense for the state of \$680,657.08.

It is astonishing that in all the reports of the state institutions syphilis is not mentioned. We looked over the report of Athens State Hospital, Ohio School for the Blind, Toledo State Hospital, Ohio State School for the Deaf, Ohio Institution for Feeble-minded, Ohio Hospital for Epileptics, Girls' Industrial Home, Masillon State Reformatory and many others; and syphilis, as a cause of these defects, could not be found mentioned even once.

Is there necessity for further proof of the neglect on the part of all? Shall we



as physicians wait for the public demand before we act? Or shall we show the world as in the past that we are alive to the necessity of stamping out this malady from civilization. That we are not altogether to blame that this disease of which so much has been known has been so neglected is true. Modesty and shame have deterred not only the physicians but the laity also. But now we all come face to face with the dangers. Then why should we delay longer?

Already attempts at legislation have been broached, but we need something more than legislation. We need first of all a thorough awakening of the public, and their co-operation; and above all we need the moral support of the churches. To me it is evident that while a few can rely on their own moral strength, the many need encouragement. Hence I say we need the churches with us. We need the press with us. We need the support of all corporations. In fact, it may be said of big corporations, whether you look upon it as philanthropy or not, that they are being thoroughly aroused to the necessity of looking after the physical welfare of their employes. This in itself is a big help. That their example will be followed by smaller corporations, I have not the least doubt.

Corporations are aware of the fact that inanimate machinery can be made to perform its task perfectly, but that human machinery is never quite perfect. But it may be improved and rendered less liable to mistakes, through education and training, coupled with a perfect physical being. The man who desires to engineer or pilot the ship, who is a subject of lues, is equally as dangerous as the man addicted to the use of liquors. Have not the public a right to demand of common carriers that their lives be not entrusted to those physically sick? And in turn will not the management by thorough physical examination weed out

those so afflicted? That a standard of perfection may be established, and that forced observance of standards will cause an awakening among those depending on such companies for employment. This in itself will accomplish much.

The proper education of both sexes, through the pulpit and press, to the dangers of exposure to this disease must go on, not losing sight of the fact that one standard cannot be set for women and another for men. The transgression of a law is equally as blamable for one as for the other. Society must so regard it that the man cannot go free and the woman suffer, but both be equally condemned.

In concluding, I cannot refrain from quoting a few simple rules laid down by Ravogli:

1. Instruction and education must increase the standard of morality and inculcate high respect for women.

2. Diminish the over-crowding in the tenement houses. In factories and establishments where girls and boys are employed, rules of strict respect for each other must be enforced.

3. Those who have been infected with syphilis must be treated. Hospitals should have to take care of venereal patients, and dispensaries to be within easy reach of everybody.

4. Prostitution must be under municipal surveillance; and infected prostitutes must not be allowed to remain at large, but must be confined in hospitals and kept under treatment until the manifestations of lues are no longer dangerous for transmission.

Morrow says, in the Chairman's Report of the Committee of Seven, appointed by the New York County Medical Society in 1901: "I advocated placing venereal diseases on the same plane of sanitary control as other infectious diseases dangerous to the public health, the entering wedge to this control being the obligatory notifica-

tion of these diseases, under specified conditions, with due regard to their shameful character in popular estimation. Difficulties would doubtless be encountered, just as in the case of tuberculosis, but they could be dealt with as they arise. Opposition to this measure would be largely disarmed by the assurance that this information would be kept secret by the sanitary authorities."

### *PULMONARY TUBERCULOSIS.*

#### *UROCHROMOGEN REACTION IN*

SALING SIMON, A.B., M.D.

DENVER.

For many years physicians have sought some method which would give them an index to the proper use of tuberculin. It was considered desirable to know, first, in what class of cases tuberculin was to be used secondly, in what dosage, and when tuberculin was to be stopped.

Clinical symptoms, temperature, pulse, etc., served at first as a guide to the dosage and repetition of same. Later Wright brought forward the opsonic index as a guide, not only to the use of vaccines, but also of tuberculin. This, however, was found to be too laborious and uncertain for clinical use. During the past few years the clinical symptoms have again served as the only aides in the use of tuberculin.

Sahli, one of the most enthusiastic advocates of the use of tuberculin in tuberculosis, recommends beginning with very small doses, and slowly increasing. He regards that dose upon which the patient improves as the optimal one which is not to be exceeded. This has been the manner in which I have administered tuberculin for several years. None of these suggestions have seemed sufficient and most physicians have felt the lack of a satisfactory method for the administration. The introduction by Weisz, of the urochromogen reaction as an additional guide for the use of tuberculin was therefore welcomed. The reac-

tion is very simple to perform, requiring but a few moments, the technique of the reaction is as follows: to 2cc of filtered urine in a test tube 1cm. in diameter 12cm. in length are added 4cc. of distilled water at a temperature of about 40° C. The test tube is shaken and one half of contents poured into a second test tube which serves as a control. To test tube No. 1 three drops of a freshly-made 1 to 1,000 solution of permanganate of potassium are added, and same is shaken. The tubes are set aside for a few moments. If the permanganate of potassium imparts to the contents of test tube No. 1 a distinct permanent yellow color the test is positive. The urochromogen reaction is regarded as a forerunner of the diazo reaction. The tube No. 2 serves as control for the purpose of comparison with tube No. 1.

Heflebower has shown that the permanganate reaction (Am. J. Med. Sc. Feb. 1912) occurs more frequently in T. B. than does the diazo reaction; he also is of the opinion that tuberculous patients in whose urine the urochromogen reaction was present are not suitable for tuberculin therapy.

Szabody states that when the diazo reaction was present before tuberculin therapy was begun, improvement was to be expected only exceptionally, in fact, that most patients were made worse by the tuberculin treatment.

Weisz believes that the elimination of urochromogen in the urine, speaks for an unfavorable outcome of the case, at any rate its constant presence does, even though no fever be present. The occurrence of the urochromogen reaction in the urine during the course of tuberculin therapy, is an indication for its cessation; especially is this true when an afternoon rise of temperature occurs simultaneously; on the other hand, the presence of fever without urochromogen is no contraindication to the careful and cautious administration of tuberculin. It is in just such cases sur-

prising results are often obtained.

The urochromogen reaction may occur following a single injection of tuberculin, and in such a case it is to be regarded either as indicating an unfavorable prognosis, or that the patient is extremely susceptible, especially is this true if very small doses were used. Upon its appearance, the use of tuberculin should be stopped until the reaction has disappeared, and may then be resumed with much smaller doses.

The appearance of the urochromogen reaction is to be regarded as an indication of the activity of the tuberculous process, and to attempt to administer tuberculin in such a phase

of the disease, is probably harmful, for the tuberculin acts as a stimulant to antibody formation in that class of patients who have sufficient reserve force to respond to their formation. And if the presence of the urochromogen reaction is to be regarded as an indication of the exhaustion of the reserve forces of the body, then only those patients showing a tendency toward healing and in whom this reaction is absent, are to be regarded as favorable subjects for the administration of tuberculin.

I wish to report my experience with the diazo and urochromogen reaction during the past year, in patients with pulmonary tuberculosis, some of whom were treated with tuberculin:

Name.	Age.	Stage of Disease.	General Condition.	Fever.	Therapy.	Uroch.	Diazo.	Outcome.
1.—C. B.	21	Mod. Adv.	Fair	Slight	Tuberc.	Cont. Neg.	Cont. Neg.	Very much improved.
2.—I. R.	25	Advanced	Fair	Slight	Tuberc.	Cont. Neg.	Cont. Neg.	Very much improved.
3.—J. L.	..	Advanced	Fair	Mod.	Tuberc.	Cont. Neg.	Cont. Neg.	Improved. Later developed many hemorrhages; controlled by artificial pneumothorax; improving.
4.—S. R.	25	Chronic Adv.	Poor	Slight	Tuberc.	Cont. Neg.	Cont. Neg.	Improved.
5.—M. V.	42	Mod.	Fair	Slight	Tuberc.	Cont. Neg.	Cont. Neg.	Improved first; relapsed, stationary.
6.—A. B.	23	Adv. with mixed infect.	Poor	Mod.	Tuberc.	Cont. Neg.	Cont. Neg.	Progressive.
7.—E. H.	21	Advanced	Poor	Mod.	Tuberc.	Cont. Neg.	Cont. Neg.	Very much improved.
8.—M. G.	24	Mod. Adv.	Good	None	Tuberc.	Cont. Neg.	Cont. Neg.	Very much improved.
9.—Mrs. M.	45	Adv. with mixed infect.	Poor	Mod.	Vacc.	Cont. Neg.	Cont. Neg.	Improved.
10.—C. P.	22	Adv. with mixed infect.	Fair	Mod.	Vacc.	Cont. Neg.	Cont. Neg.	Much improved.
11.—N. T.	21	Mod. Adv.	Fair	Mod.	Vacc.	Cont. Neg.	Cont. Neg.	Much improved.
12.—M. T.	30	Mod. Adv. with mixed infect.	Poor	Mod.	Vaccine	Cont. Neg.	Cont. Neg.	Improved.
13.—J. B.	30	Mod. Adv.	Fair	Slight	Vaccine	Cont. Neg.	Cont. Neg.	Improving.
14.—C. R.	21	Advanced	Fair	None	No Spec. Tr.	Neg.	Neg.	Died suddenly following severe hemorrhage.
15.—Van.	40	Mod. Adv.	Fair	None	Tuberc.	Cont. Neg.	Cont. Neg.	Improving.
16.—S.	32	Adv. with mixed infect.	Fair	Marked	Vac.	Cont. Neg.	Cont. Neg.	Unimproved.
17.—M. H.	25	Adv. with mixed infect.	Fair	Marked	Tub. & Vac.	Pos.	Pos.	This patient at the time of the pos. urochr. and Diazo was suffering with an acute pneumo. Is improving.
18.—N. N.	23	Adv. with mixed infect.	Poor	Marked	Tub. & Vac.	Pos.	Pos.	Tub. was administered before urine was tested and discontinued when urine gave positive reactions. Pat. died.
19.—C. S.	21	Adv.	Poor	Mod.	Tuberc.	† Pos.	† Neg.	Patient died.
20.—E. S.	38	Adv. Fibroid	Fair	None.				Tuberculin not given on acct. of pos. urochromogen. Pat. stationary.
21.—M. P.	24	Adv. with mixed infect.	Poor	Marked	Tub. & Vac.		Neg.	Pat. died East, the urochromogen reaction became Pos. prior to leaving Denver.
22.—H. F.	22	Adv.	Poor	Marked	No Spec. Tr.	Pos.	Neg.	Patient died.
23.—L.	45	Adv.	Poor	Marked	No Spec. Tr.	Pos.	Pos.	Patient died.
24.—J. M.	35	Adv. with mixed infect.	Poor	Marked	No Spec. Tr.	Pos.	Neg.	Patient died.
25.—P. G.	17	Subacute T. B.	Poor	Marked	No Spec. Tr.	Pos.	Neg.	Patient died.

†Became positive during tuberculin therapy.

‡Remained negative until prior to death, when it became positive.



1. The reaction precedes the diazo, the latter never occurring unless the urochromogen is also present; on the other hand the urochromogen reaction is frequently obtained with the diazo absent.

2. The constant presence of the urochromogen reaction in a case of pulmonary tuberculosis is of grave prognostic import. Of the nine cases in my report that gave a positive urochromogen reaction, seven have died.

3. Its occurrence during a course of tuberculin or during an acute illness superimposed upon a pulmonary tuberculosis calls for the immediate cessation of the tuberculin, but does not necessarily indicate a serious outcome of the case.

4. It has some value in checking the dosage of tuberculin in that its occurrence during the administration of large doses indicates that the antibody producing power of the blood has been overtaxed.

5. Some value in the diagnosis of tuberculosis has been claimed for the reaction, I have had no experience with it in this direction.

6. The simplicity of the reaction warrants its routine performance whenever urine is being examined and certainly in all cases of pulmonary tuberculosis whether under treatment or not even though the reaction were of less value than would appear.

## News Notes

Secretaries of County Societies and other interested persons are requested to contribute news items for this department.

Dr. J. M. Perkins, mayor of Denver, has announced that if the city of Denver is to demand all of his time he will resign his commissionership rather than give up his professional work.

Dr. Charles McBurney, the distinguished New York surgeon, died November 7. Dr. McBurney contributed greatly to our present knowledge of appendicitis.

Dr. George N. Towers of Ridgeway and Mrs. Wila Johnson of Telluride were married October 14.

It is announced on what seems to be good authority that Dr. D. O. Norton of Fort Collins, who is visiting in California, has caught the largest fish that has ever been brought into Long Beach.

Dr. A. J. Chosholm, formerly of Monte Vista, has removed to Trinidad.

Dr. R. F. Sheldon, Ouray, was married in Denver November 5 to Miss Caroline Agnes Babcock.

A co-operative agreement between the United States Bureau of Mines and the National Radium Institute, of which latter Dr. Howard A. Kelly is a director, has been arranged. It is the purpose in making this agreement to provide for the mining and refining of radium-bearing ores of Colorado and Utah.

The Johns Hopkins Hospital Medical School has received a gift of \$500,000 from John D. Rockefeller. The gift is to be known as the William H. Welch Endowment for Clinical Education and Research. It is the purpose of the donor to provide for teachers who will give their whole time to the work of teaching.

Dr. R. W. Corwin of Pueblo addressed the Mile High Club of Denver on "Eugenics."

The Supreme Court of Colorado, in a recent decision, has nullified those provisions of the Colorado medical practice act which gave the State Board of Medical Examiners power to revoke a physician's license for guaranteeing to cure a manifestly incurable disease and for advertising the treatment of diseases of the sexual organs.

Dr. Cuthbert Powell and wife have returned from a trip of a month's duration, which included all the clinical points of the eastern part of the United States.

Dr. A. J. Markley and wife have gone to Ohio for a month's vacation and visit at their old homes.

Dr. Charles N. Meader, who made a careful review of "acidosis" for the meeting of the State Medical Society, has removed his office to the McPhee building, Denver.

Dr. Hubert Work is touring Indiana and western Pennsylvania in an automobile, visiting once more the scenes of his childhood.

Dr. P. J. McHugh is busy with public as well as professional matters. He has frequently shown a commendable fondness for social questions. He is now a candidate for Commissioner of Safety of Fort Collins, and he recently attended a meeting in Nebraska for the purpose of protecting the interests of Fort Collins in the construction of the transcontinental highway.

The Denver Medical Club, one of the most hospitable and enjoyable of the several social and scientific medical societies of Denver, has chosen the following officers: President, Dr. Charles Jaeger; first vice president, Dr. R. S. Allen; second vice president, Dr. J. W. Ames; secretary, Dr. Alexander Craig; treasurer, Dr. C. C. Bell.

Dr. W. A. Kickland, Fort Collins, spent part of the month of October at his former home, Crystal, Michigan.

Dr. Stanley Eichberg, Denver, is visiting his brother in Cincinnati.

The Eastern Colorado Medical Association has been reorganized with the following members: Edwin A. Clarke, Akron, president; Earl D. McGill, Wray, secretary; J. E. Cavey, Yuma; J. W. Kaylor, Akron; Geo. Mathews, Wray; R. M. Smith, Akron; C. M. Worth, Vernon. This society disbanded a few years ago because no one took enough interest in it to keep it alive. We congratulate the members upon the reorganization of this society and hope that the society will continue to flourish.

## Constituent Societies

### EL PASO COUNTY.

The regular meeting of **El Paso County Medical Society** was held at Antlers Hotel October 11, 1913. Twenty-five members present.

Program: Arterio Sclerosis, by Dr. H. W. Reed.

The subject was generally discussed by all present. A luncheon was served after the meeting.

Dr. Shaefer was elected to membership.

J. H. BROWN, Secy.

### SAN LUIS VALLEY.

The **San Luis Valley Medical Association** held its regular monthly meeting at the Victoria hotel, Alamosa, Wednesday night. Dr. C. B. Lyman of Denver was present and read a paper on "Surgical Aspects of Indigestion."

The doctors in attendance were Drs. Moninger, Pollock, Trueblood and Van Valin of Monte Vista, Dr. Shelton from Antonito, Dr. Shippey from Sagauche, Drs. Davlin, Orr and Herriman of Alamosa.

Dr. Shelton read a paper on the "Effect of Visitors on the Course of Typhoid Fever." A banquet was held at the Victoria hotel. After the meeting adjourned the doctors met in a clinic session at the Alamosa hospital.

### CITY AND COUNTY OF DENVER.

September 6th, 1913.

The minutes of the last meeting were read and approved.

There was no report from the Board of Censors.

There were no new applications for membership.

The scientific program was then given:

Dr. Jackson read a paper entitled "Teaching Medicine in Denver." Dr. Jackson referred to the history of medical teaching in the past, and to its development in recent years in older centers. He spoke of the stress laid on the various branches of medical teaching, and of the changing views of the importance of some of these. He rather favors a large teaching staff, holding up the example of old, well-recognized schools as his argument.

By comparison with several important medical centers in Europe, Denver's size, he shows,

is much in its favor, and with increased clinical facilities he thinks this city should be of great importance in the medical teaching world.

Dr. Moses Collins then read a paper entitled "The Report of a Case of Carcinoma of the Stomach and Intestines."

In Dr. Collins' case the patient was sent to the National Jewish Hospital for Consumptives with a diagnosis of pulmonary tuberculosis, both apices affected and tubercle bacille in the sputum. Later examinations at the hospital were negative so far as the lungs were concerned, though a Von Pirquet skin test was positive.

A few weeks after admission abdominal symptoms developed, with loss of weight, indigestion and vomiting, and later, pain. The symptoms persisting, operation was advised, and an inoperable carcinoma of the rectum and colon was discovered.

The patient died the next day following operation. The autopsy report was given in detail, and particular attention drawn to the various errors in diagnosis of the case.

The meeting then adjourned. Present—70.

### CITY AND COUNTY OF DENVER.

October 21st, 1913.

The minutes of the previous meeting were read and approved.

Dr. Edward Lazelle exhibited a case of goiter showing an unusual history and peculiar nervous manifestations.

Dr. W. W. Grant exhibited a case showing late operative results following an abscess of the lung.

The applications for membership of Drs. W. W. Williams, J. L. Mortimer, Arnold Munnig, H. A. McKnight and O. G. Place were presented and referred to the Board of Censors.

The first paper of the evening was by Dr. Edward Jackson, entitled "The Examination of Cases of Recent Eye Injury." Dr. Jackson spoke of the importance of thorough investigation and accurate diagnosis in these cases. He states that a careful and detailed history of the case is first to be secured. Questions should then be asked as to the exact position of the patient at the time of injury, the direction in which he was looking, the probable angle from which the injury was received, and the probable size of any foreign body causing the accident.

He recited cases showing the ease with which important details could be overlooked.

In conclusion, he emphasized the importance of extreme care and exactness in the diagnosis of such injuries.

Dr. William Beggs then gave a demonstration of the use of the X-ray in cases of pneumothorax. His talk was almost totally in connection with a series of plates which he showed, exhibiting different stages of the subject.

Dr. Arnold Taussig spoke briefly of his experience in this work in association with Dr. Beggs.

The meeting then adjourned. Present—65.



## CITY AND COUNTY OF DENVER.

November 4th, 1913.

The minutes of the previous meeting were read and approved.

The Board of Censors did not report.

The application of Dr. Robert W. King was presented and referred to the Board of Censors.

Dr. Jayne spoke briefly of the transactions of the Board of Trustees, and the necessity for an early increase in the size of the library rooms.

The first paper of the evening was presented by Professor J. B. Moore of the School of Mines, and in charge of the Denver branch of the United States Bureau of Mines, entitled "Radioactive Methods as Applied to Medicine."

With the aid of several charts Prof. Moore explained in some detail the geological history of this element, beginning with its presence in the various ores, such as carnotite and pitchblend, and tracing down its extraction to the form used by medical practitioners.

He referred at some length to its so-called emanations, and explained the various phases in which these had been studied.

He spoke briefly of the possibility of the transmutation of elements being worked out to an actual fact, through these investigations.

The various rays thrown off by radium were carefully explained and the importance of their differentiation when radium is used medically was brought to the attention of the members. He spoke of the cost of the preparation at present, and the work being done to develop new supplies. He advised extreme caution when it is being purchased, that the quality be proven up to standard.

The discussion was opened by a short paper written by Dr. Stover and read to the society by Dr. Buchtel.

Dr. Stover referred to the history of the use of radium in medicine, and of the various methods of application. He showed that, as is the case with the Roentgen ray, certain types of tissue are very much more susceptible to the damage by the rays than are other types; particularly is this true of abnormal cell structure and morbid growths.

He named several of the conditions in which its use had been found to be of value, such as cutaneous epitheliomata, certain birth-marks, some keloids, superficial lupus vulgaris. In numerous cases of inoperable carcinomata, and many cases of sarcomatosa, its actions, he pointed out, have been very wonderful.

Dr. W. A. Jayne then spoke briefly on the medical use to which radium has been put. He referred to the possibility of the efficacious results of treatment at certain mineral springs being due to the emanations of minute particles of radium contained in the waters. He referred to the work of Sir Frederick Treves in London, and to the wonderful results obtained by him in the treatment of certain cases of sarcomatous growths.

He pointed out that though in the United States little work had been done in the past towards investigating the value of radium in medicine, that in the future the possibilities of

very considerable work being done were good.

Dr. Gibson also discussed the paper briefly.

On motion of Dr. Rogers, a vote of thanks was tendered Prof. Moore.

The meeting then adjourned. Present—70.

## Book Reviews

### PREVENTION AND CONTROL OF DISEASE.

By Francis Ramaley, Ph. D., Prof. of Biology, University of Colorado and Clay E. Giffin, B. A. M. D., Instructor in Surgery, University of Colorado; Cloth. Price \$3.00 net. Pp. 386. Smith-Brooks Press, Denver, 1913.

No great gain can be made in our campaign against preventable disease without the hearty co-operation of the public. It is the disregard of well-founded principles of prophylaxis, either wilful or born of ignorance, that perpetuates acute infectious disease in every community. To secure such support it is necessary to spread broadcast the doctrine of community effort in the control of contagion, and it is precisely such books as these, written for the public rather than the medical student or practicing physician, which will bring about an early consummation of this ideal.

The authors have taken up in a manner entirely free from technical phraseology the various causes of disease and disease conditions; the theories of immunity; the reasons for individual susceptibility and resistance; natural history of microorganisms and their role in the production of human diseases. There are comprehensive chapters on disinfection; on vital statistics; the acute exanthemata and tuberculosis. The book should be of inestimable value in acquainting those most closely concerned with the advance of hygiene and sanitation.

**Diseases of the Eye.** By George E. deSchweinitz, M.D., Professor of Ophthalmology in the University of Pennsylvania. Seventh Edition, thoroughly revised. Octavo of 979 pages, 360 text illustrations and seven lithographic plates. Philadelphia and London: W. B. Saunders Company, 1913. Cloth, \$5 net; half morocco, \$6 net.

If buying a book were equivalent to reading it, the appearance of a new edition of this work would be an eloquent testimonial to the studious disposition of English-speaking medical practitioners. In twenty-one years Dr. de Schweinitz' handbook of ophthalmic practice has reached seven editions. Its character as an up-to-date authority is maintained in this new edition by a number of special paragraphs dealing with subjects which have been discussed in the current literature of ophthalmology since the preparation of the last edition. One of the most important of these new subjects is the exact measurement of intraocular tension by means of the tonometer of Schiötz. This valuable addition to the armamentarium of ophthalmic diagnosis, which was merely mentioned in the edition of 1910,



is now carefully described, and its results reviewed. Elliot's procedure of simple trephining of the sclera at the angle of the anterior chamber, which is deservedly becoming popular for the relief of glaucoma, is very appropriately described in Major Elliot's own language.

Other new paragraphs deal with ophthalmodynamoscopy; sporotrichosis of the eyelids and conjunctiva; rosacea keratitis; epithelial dystrophy of the cornea; marginal degeneration of the cornea; blue sclerotics; progressive atrophy of the iris; exudative retinitis angiomatosis retinae (Von Hippel's disease); cysts of the retina; blindness from arylarsenates; Siegrist's methods of local anesthesia; Reese's muscle resection operation; and Toti's operation (Dacryocystorhinostomia).

The results achieved by the use of salvarsan in various syphilitic conditions are concisely stated. The index to the volume contains ten references to this new remedy. The author's experience with salvarsan in interstitial keratitis of syphilitic origin has been much more favorable than that of most ophthalmologists. He gives four or five injections, using mercurial inunctions or iodid of potassium in the meantime.

The volume contains thirty-four more printed pages, and nine more illustrations, than the preceding edition. Wm. H. CRISP.

**Collected Papers by the Staff of St. Mary's Hospital, Mayo Clinic, Rochester, Minnesota, 1912.** W. B. Saunders Company, Philadelphia and London.

The sixth volume of collected papers by the staff of the Mayo Clinic containing the articles written and presented for publication to the various medical journals, during the year 1912, is well edited, and like its precedent volumes is distinguished for the excellence of the articles presented.

The subject matter is of course already familiar, at least in part, to most of the profession. Of special interest are the papers dealing with ulcer and cancer, and an optimistic trend is evident in the treatment of the latter subject.

The papers on the thyroid and the thymus are classic. Nephrectomy without drainage for tuberculous kidney is a step in advance. The observations on hospitals and surgery abroad will be of interest to those who have not recently traveled. Typographically the volume is all that can be asked. H. S. C.

**Sexual Impotence.** New (4th) Edition Enlarged. Sexual Impotence. By Victor G. Veckl, M. D. Consulting Genito-Urinary Surgeon to the Mount Zion Hospital, San Francisco. Fourth edition, enlarged. 12 mo. of 394 pages. Philadelphia and London; W. B. Saunders Company, 1912. Cloth, \$2.25, net.

This book presents the reader with a complete account of our present knowledge in this difficult and complex field. It is based upon an extensive personal experience, as well as an intimate acquaintance with the literature on the subject. The author gives his own views and states and criticizes the theories of others.

In the chapter on prophylaxis, which is full of detailed explanation, the general practitioner will find much that is helpful or suggestive.

The chapter on treatment leans largely toward conservatism from the standpoint of therapy. O. L.

## DISEASES OF THE EAR.

By Philip D. Kerrison, M. D.

Price \$5.00

New York City.

J. B. Lippincott Company, Philadelphia and London.

It was my privilege in the summer of 1909 to work with and under the direction of the author of this new book. At that time I was especially impressed with Dr. Kerrison's painstaking interest, extreme thoroughness and above all his originality and practicability.

Among many other appointments affording great opportunity for otological study and investigation Dr. Kerrison was then and is now, Chief of the large ear clinic connected with Bellevue Hospital, New York. His extensive otological experience has thoroughly prepared him to write a practical book on Diseases of the Ear.

Of medical and surgical books in most of the branches we have an abundance; but the time is opportune for a practical, thorough text book on modern otology. And after carefully reading it from cover to cover, I am convinced that this book is one for which otologists are looking.

Of recent date many notable advances in medicine and surgery have been made; but I doubt if during the last decade any department can boast of greater achievements than those of otology.

In this new book of about six hundred pages uncertain procedures are discarded; theory is placed in the back ground and late practical methods are given the emphasis and space to which they are entitled.

Recent work on the static labyrinth has the extended space which its importance demands. Syphilitic lesions of labyrinth and auditory nerve are carefully considered. Labyrinthine physiology and pathology are gone into thoroughly and each step of approved labyrinthine surgery is carefully outlined and clearly illustrated. Throughout the entire book each successive step of operative surgery is made plain and clearly understandable by illustration.

The illustrations are in large part from original drawings made under the personal supervision of the author. The indications for otitic intra cranial surgery and the operative procedures are given unusual space and afford valuable information in this important branch of otology.

In this book recent work in diseases of the ear is weighed in the balance of practical otological experience and its true worth thus indicated. The practical therapeutic application of salvarsan, the use of vaccines, the Hiss leucocyte extracts, etc., in aural disease, are discussed and their true value outlined.

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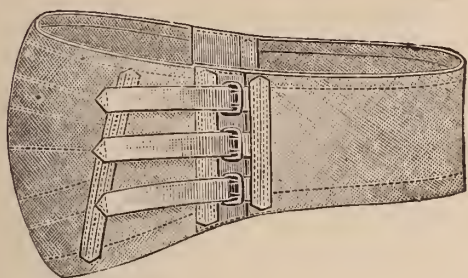
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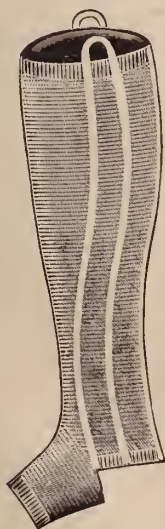
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Sec. 4. Each Constituent Society shall have jurisdiction and general direction of the affairs of the profession in the territory covered.

Sec. 5. Each Constituent Society shall be the judge of the qualifications of its own members, but as such societies are the only portals to this Society and to the American Medical Association, every reputable and legally qualified physician residing within its jurisdiction who does not practice or claim to practice and agrees not to practice sectarian medicine, shall be entitled to membership.



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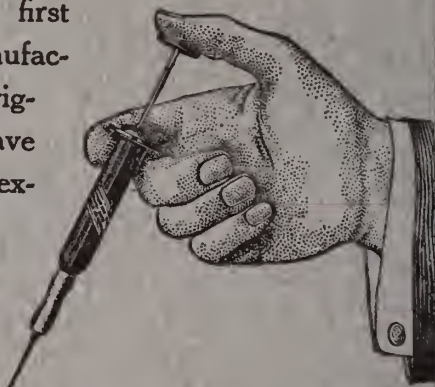
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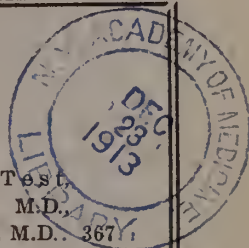
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1915—C. F. Gardner, Colorado Springs; E. A. Whitmore, Leadville.  
1916—A. G. Taylor, Grand Junction; J. C. Chipman, Sterling.  
1917—Horace G. Wetherill, Denver; A. R. Pollock, Monte Vista.  
1918—J. W. Ames, Denver; E. A. Elder, Pueblo.

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### Term expires.

1914—Walter A. Jayne, Denver.  
1915—L. H. McKinnie, Colo. Spgs.

### Alternates.

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**Publication:** Edward Jackson, Chairman, Denver (1914); Geo. A. Moleen, Denver (1915); A. J. Markley, Denver (1916).

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VOL. X

DECEMBER, 1913

NO. 12

## Editorial Comment

### PRIZE FOR ORIGINAL MEDICAL RESEARCH.

In pursuance of a resolution passed by the House of Delegates at the recent meeting at Glenwood Springs, the Colorado State Medical Society renews its offer of a prize of one hundred dollars (\$100) for an essay based upon original medical or surgical research work by a member of the Society, or an undergraduate medical student of the University of Colorado who has been a resident of Colorado for not less than five years.

The following rules will govern the award:

1. Essays and exhibits of work shall be presented to the chairman of this committee not later than the fifteenth of August, 1913.

2. Essays must be typewritten or printed.

3. No essay or work previously published will be considered.

4. All essays must be presented anonymously. Each must be marked by a motto or legend similar to one on an accompanying sealed envelope containing the name and address of the writer. Any device or clue to the identity of the writer

shall suffice to exclude the essay from competition.

5. If two persons collaborate, the prize shall be equally divided between them. If there are two essays of equal merit, the award may be divided between their authors.

6. The committee reserves the right to withhold the prize if in its judgment no essay is worthy of it.

7. No essay submitted for competition shall be made public or otherwise used until formally released by the committee. Any essay awarded the prize shall become the exclusive property of the Society and shall be published only with the consent of the committee. All other essays submitted will be returned to their authors on application to the chairman of the committee.

8. Unless specifically excused by the committee, the person who shall be adjudged worthy of receiving the award shall present the paper and receive the prize at the annual meeting of the society at the time specified on the program. If the paper shall take more than fifteen minutes in the reading an abstract to come within this time limit shall be presented if required.

#### Committee of Award:

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JAMES R. ARNEILL,  
CHARLES B. LYMAN.

## THE NOBEL PRIZE FOR MEDICINE.

---

The latest award of the Nobel prize for medicine was made to Charles Richet, professor of Physiology in the University of Paris. The particular work, of all the varied and important works of this active scientist, which brought him this distinction and reward was his discoveries in anaphylaxis. It was Richet who gave us the word "anaphylaxis." We are becoming accustomed to that, however, and will not much longer hold it against him.

The pioneer work of Richet in anaphylaxis discovered many of the natural laws of immunity. He experimented upon dogs by giving intravenous injections of a certain extract he had made from the tentacles of the sea anemone. He noticed that while large doses were at once poisonous, very small ones were lethal to dogs that had been prepared from eleven to fifty days before by a preliminary dose of the same preparation. Richet did not attribute the poisonous effect to a foreign proteid, but rather assigned his results to the peculiar preparation of the proteid which he had made. His experiments were numerous and carefully performed and his inferences have not been greatly modified by the vast amount of experimentation which has since been done along the same lines.

Among the writings of Dr. Richet are a dictionary of physiology, a book entitled, "The Poisons of the Intellect;" a treatise on psychology and a book on war and peace. He is, moreover, the author of many novels and poems.

---

## THE WHOLE-TIME PROFESSOR.

---

The changes in medical education in America have come with amazing rapidity. The spirit of reform seemed to gather at once so much force that it swept away without apparent effort the weak

opposition of these who found it possible to be satisfied with the old proprietary and profit-sharing medical school.

The rapid progress of medicine, entailing as it does higher specialism, longer courses and especial laboratory equipment and instruction are doubtless largely responsible for the almost complete revolution of medical instruction. The didactic lecture is about the only surviving element of the medical course given so recently as ten years ago.

The latest change to be announced is the employment of full-time teachers in the important branches of medicine. A benefaction of John D. Rockefeller has made it possible for the Johns Hopkins University to adopt this expensive innovation. The example is sure to prove contagious. Recent events will justify the prediction that in less than ten years the school that does not provide pay for at least half of the time of its teachers will be a shame to its students and graduates.

The Royal Commission on University Education in London has recommended that clinical teaching in the university medical school shall be given by whole-time professors. This decision was reached after hearing the arguments of Mr. Flexner, who urged the adoption of the plan, and of Osler and Von Müller, both of whom were in favor of giving the clinician larger liberties for practice outside the clinic.

The proper clinical instruction of students requires an immense amount of time and can never be properly attended to until the service is paid for. There is no difference, if one judges by the demands made upon the teacher's time, between clinical teaching in internal medicine and teaching physiology and anatomy.

It has been carefully arranged in the plan recently instituted at Johns Hopkins

to allow the professors certain opportunities for work outside their class rooms, but any fees derived from this service are to go into the general funds of the school. It may be doubted whether this hopeless limitation of the professor to his income as a teacher will prove the most wholesome incentive to effective work. A less radical departure from existing arrangements and one more consistent with the financial resources of most medical schools would be to place the teacher on part pay and demand in return a definite amount of service.

Whatever may be the plan generally adopted, it is sure that the wedge has been entered and other schools will imitate in one way or another the high example set by the Johns Hopkins.

---

*THE TWENTY-FIFTH ANNIVERSARY OF THE PASTEUR INSTITUTE.*

---

On the 18th of November the celebration of the twenty-fifth anniversary of the Pasteur Institute took place in Paris. In connection with this celebration Dr. Marmorek related some interesting incidents of the founding and growth of the institution. His reminiscences have been translated and furnished to Colorado Medicine by Mr. Joseph Max Shipiro, a senior student in the medical school of the University of Colorado.

Here they are:

"It is a unique establishment. Its founding, growth and fame the world over bear certain aspects which are not to be found in connection with the history of any other institution devoted to scientific investigation. On the front side of the building is an inscription telling that contributions from every part of the globe helped towards erecting the magnificent building.

"When Pasteur, the chemist, who never studied medicine, proclaimed to the world his discovery of a treatment for hydrophobia, he, together with the members of the Academy of Science, expressed the wish to have a home where the remedy could be prepared, administered and further details elaborated. Money

was required for the realization of the dream and contributions were sent from all parts of the world. The wish of the great man was gratified.

"A beautiful monument is placed in front of the steps of the building. It is not the master, but a farmer's boy in his wooden shoes and with a shepherd's bag on his shoulders, fighting a dog. A famous French sculptor thus rendered immortal the historical occurrence, which sounds so like a fairy tale.

"A boy-shepherd living in the mountains of South France was attacked by a mad dog. His playmates escaped in fear, but the eldest, who was scarcely 15 years old, considered it his duty to protect other children. He ran after the dog, intending to kill him. He strangled him, but paid dearly for his valor. He was bitten in several places. The mayor of the little town thought about his neighbor, Pasteur, who, while on his summer vacation, told him about his treatment for hydrophobia. Several days later the boy was taken to Pasteur and was the first man upon whom the new remedy was tried. The result was satisfactory.

"The boy has grown to be a strong French peasant, wears a uniform and fulfills the duties of a janitor. He accompanies the numberless foreign visitors through the institution. As he approaches the monument he bashfully smiles, and with lowered eyes says, 'C'est moi.' Is there another janitor in the world who can see his own monument through his own window and explain its meaning to bewildered strangers?

"One day long after the statue had been decorating the grounds I entered the dwelling of the janitor and noticed a miniature bronze copy of the original monument. I inquired of his wife who had presented this to them, to which she replied:

"We paid 800 francs for it for the sake of our children, that they might know their father and follow his example."

"I saw 'Father Pasteur' (this was the usual name for him) in his last days, a sick, old, broken-down man, but the fire in his clear blue eyes and his wise talks strongly testified that his shattered physique left his great mind untouched. He occupied his room in the Institute and from his study he could watch the work of his assistants, trying to perpetuate the splendid work of their master. He was one of those few who could see their immortality during life. But the love of the nation for Pasteur was proven more by the tributes paid to his dead body than by the respect given him during life. It is no exaggeration to say that France raised him to the pedestal of the Gods of Olympia.

"I remember distinctly, it was a cloudy September day. Mourning was evident on the face of every inhabitant of Paris. A French garrison blockaded the street from the Institute to the Notre Dame church. Every officer of the Republic followed the corpse, and multitudes of people crowded behind the dense lines of soldiers. The President of today, then min-



ister of public education and a very young man, pointed out the great loss that the French nation suffered in Pasteur's death. But together with his sorrow he expressed his gratitude that fate had given to the world so great a man.

"The body was buried on the grounds of the Institute.

"In this building, no special authority was recognized. Only the man of achievement and action was respected. Seven languages were heard in the halls; strangers were welcomed, and everything was open to them.

"On Saturday afternoon all gathered at luncheon. It would be impossible to describe the spirit that prevailed at the assembly table. Less easy would it be to find another assemblage of the kind where individual scientists represented every land and race, even Asia, Africa, India and Madagascar. This was a family, with science as a binding element. Often there were disagreements, but these never led to feelings, and a good-fellow spirit always prevailed. Everyone considered himself to be the child of one great cosmopolitan culture. It was the beautiful period in my life."

By the way, there are still a few doctors who do not belong to the society. They should belong, but they do not appreciate the fact. They think they could get along just as well if there were no society. They are sadly mistaken. Just wait till they get sick or one of the family gets sick or needs an operation. Where do they go for a consultant or an operator or a pathologist? Why, right straight to the medical society! Ninety-nine per cent of the best of the profession are in the society, and you can be just as sure that the same percentage of non-members don't amount to much. If it were not for the medical societies we would be traveling in the same old rut all the time. Our patients would be dying of "gastric fever," of "a touch of malaria," of "brain fever," of "diaree," or some other worn-out guess. The medical societies are the life of the profession, and those who do not take an active part are merely parasites.—Bulletin Lawrence Co. (Pa.) Medical Society, Apr., 1913.

The well-conducted medical society should represent a clearing house in which every physician of the district would receive his intellectual rating and in which he could find out his professional assets and liabilities. We doctors do not "take stock" often enough, and are very apt to carry on our shelves stale, out-of-date goods. The society helps to keep a man "up to the times," and enables him to refurnish his mental shop with the latest wares. Rightly used, it may be a touchstone to which he can bring his experiences to the test and save him from falling into the rut of a few sequences. It keeps his mind open and receptive and counteracts that tendency of premature senility which is apt to overtake a man who lives in a routine.—Osler's *Æquanimity*.

## Original Articles

### ABDERHALDEN'S NEW VIEWS ON METABOLISM.\*

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The latest test for pregnancy has brought the attention of medical men to a new star in the scientific firmament. Just as the invention of the Bunsen burner, a comparatively minor achievement, has made the name of the famous German chemist familiar to the general public, so has the new test for pregnancy which is but a small incident of his monumental work introduced to the medical profession Emil Abderhalden, professor of physiology at Halle. .

To the physiologist and biological chemist his numerous and brilliant contributions have been known for a number of years. The researches he has made throw an entirely new light on the intricate and complex problems of the processes of digestion and metabolism. His work opens up magnificent new vistas for further experimentation and bids fair to solve many hitherto inexplicable mysteries in the vital phenomena of the living organism.

As the average practitioner has not the time, the inclination nor the facilities to consult original sources, it will not be amiss to give a resumé of his views which far from being mere hypotheses are based on sound experimentation and critical logic.

To those who desire a further insight into this interesting subject I would strongly recommend a perusal of Abderhalden's small volume entitled "*Synthese der Zellbausteine*" which is written in a popular vein and does not enter too deeply

\*Read before the Medical Society of the City and County of Denver, Dec. 2, 1913.

into technicalities. The same may be said of his other monograph, "Die Abwehrfermente," which discusses the rôle of the "Defensive Ferments."

When the highly-colored circular of a drug manufacturer lauds a certain proprietary combination of iron as being more assimilable because it is in organic form, it is but repeating a fallacy based on an erroneous theory of Bunge that iron can only be absorbed in an organic combination. It was in 1900, while studying the resorption of iron in the body that Abderhalden found that no matter in what combination the metal is administered it is first reduced to its elemental state before it is absorbed. Whether it occur in meat, in plants or in the form of hemoglobin it must first be split down to the ion stage before it can be taken up by the intestinal cells. This was easily proven by detecting the presence of inorganic iron with the aid of reagents which do not give any reaction for iron in organic combinations. For if the iron is absorbed in its complex organic state, why should there be inorganic iron present? Needless to say that all precaution and controls were instituted in these experiments to prevent accidental entrance of inorganic iron in the food.

The discovery that a complex combination of iron is first split up into its components naturally led to the inquiry whether the same is true of our food materials, the fats, carbohydrates and proteids. Are they absorbed in the form they occur in our nutriment or is there a preliminary cleavage into simple substance?

In the animate world we find a perfect balance between vegetable and animal life. Plants build up their variegated, highly complex organisms by the synthesis of very simple substances: carbon dioxide, water and nitrates. The animals live on the highly organized products furnished by plants or on other animals which are nourished by them.

The  $\text{CO}_2$  and waste organic matter thrown off by animals as well as their cadavers eventually become food for plants, the  $\text{CO}_2$  being used directly while the organic matter is first reduced to inorganic through the agency of bacteria of decomposition, the latter playing the rôle of intermediaries between the two kingdoms. Thus the everlasting cycle continues through the ages.

How does the animal organism utilize the plant? Does it absorb it as it is or does it first split it into its components? A large portion of the plant substance consists of carbohydrates in the form of starch, cane sugar, or cellulose. We never find these in the animal organism. (Cellulose only is found in some of the tunicates.) The sugar in our bodies is either in the form of glucose when it is transported from one portion of the body to the other, or as glycogen when it is stored up for future use, as in the liver and muscles.

If a rabbit, whose liver is free from glycogen as after fasting, be fed on starch, or on cane sugar or on cellulose there is soon an increase of glycogen in the liver. Anyone familiar with the chemical formulae of carbohydrates will readily see that a direct transformation of any of these carbohydrates into glycogen is an utter impossibility. We can only explain the conversion on the basis of a preliminary reduction of the carbohydrates in question to simple substances—into the building stones—as Abderhalden calls them. This term "building stones" is employed by him all through his writings to connote the simplest split-products of digestion from which subsequently the complex animal cell is built up.

The various carbohydrates as they are found in the different kinds of plants are each adapted even in their minutest detail of chemical configuration to the structures and the function of the particular plant cell. When the animal organism takes it over, it finds the combination entirely for-

eign to its own makeup and needs. In other words, the carbohydrate as it exists in the plant cell will not fit into the animal cell; hence the necessity for first splitting it up into its components and then rebuilding to suit the particular wants of the animal organism. To use a homely analogy: if the Metropolitan building were to be transformed into a private residence, the structure must first be razed to the ground and from the building stones and bricks, which have been carefully set aside and properly classified as to kind, size, color, etc., a new edifice is reared of such style and architecture as best meet the wants and taste of the owner.

To return to the metabolism of carbohydrates: if we let the intestinal secretion act on starch in a test tube, we get as an end product, glucose; if we feed animals with starch, we always find in the intestinal canal dextrin, the dissacharid maltose, as well as glucose, which represent respectively the stages of starch digestion.

Formerly we used to interpret these facts as follows: starch is a colloid and will therefore not pass through animal membrane, but in the form of dextrin it will diffuse through it. If this hypothesis were correct why the necessity of a further splitting of the dextrans? Again cane sugar is easily diffusible through animal membrane. Why then is it not absorbed? How does one explain the presence of a ferment, invertin, to split it into its building stones, unless it was that cane sugar as such cannot be utilized by the animal organism?

As a final proof of the fallacy that the function of the digestive tract is to transform colloids into diffusible substances, Abderhalden cites observations on animals where carbohydrates are injected directly into the blood stream, thus cutting out the alimentary canal with its glands. The dissacharid is at once gotten rid of by the kidneys and eliminated through the urine, demonstrating conclusively that the blood

will not tolerate cane sugar. In this connection it is well to call attention to a notable observation by Weinland that the blood plasma of an animal into whose circulation cane sugar had been introduced acquires the power of splitting down this sugar, whereas the plasma of normal animals possess no such property. This can easily be verified in a polarimeter. The serum of a normal animal placed for a certain length of time in contact with cane sugar will show no rotation from its initial reading, while with the serum of the animal that has been injected cane sugar, there will be a marked rotation.

The significance of this phenomenon, the production of specific ferments by injection of substances into the blood stream, which is the basis of the pregnancy and similar tests, will be dwelt at greater length later on. Suffice it for the present that ample proof has been furnished to demonstrate that carbohydrates of the food are split down in the alimentary canal to their building stones before being absorbed.

This process, be it emphasized, is a gradual one. The starches are not reduced to glucose at one fell swoop. Such a rapid and stormy dissociation would be injurious to the organism besides causing enormous waste of energy. There are many intermediate stages in the reduction process. There are many intermediate stages in the reduction process. For that matter, the same is true in the action of the yeast ferment. We are wont to consider the conversion of glucose into carbon dioxide and alcohol as a very simple process. Textbooks on chemistry blithely repeat the following equation:



While they may be correct as to the final outcome, in reality no such sudden action takes place. Many are the transition products, each simpler than the preceding one, until the end stage is reached.

If the view that complex carbohydrates



are split down to simple ones be correct, then it should be possible to replace the carbohydrates in the food by monosaccharids, such as grape sugar. Experiments on animals have proven this fact beyond a doubt. When fed on glucose as the sole carbohydrate they easily maintained their usual weight, just as on a diet of starch or cane sugar.

From the glucose molecule the animal cell may build up all kinds of substances to suit its particular needs. The liver synthesizes it to glycogen. So do the muscles. Other cells use it as a source of energy and reduce it to its ultimate components,  $\text{CO}_2$  and water, the process, again, taking place gradually.

We now come to another important constituent of the food, namely, fats. We find all kinds of fats in the plants: fluid, viscid, solid, and similar variations both physical and chemical in animal fat. What relation do animal and vegetable fats bear to each other? Are the latter absorbed in the state they exist? We know that different animals fed on the same food will store up entirely different kinds of fats. Your dog and your cat, enjoying the same scraps from the table, develop fats differing markedly in composition.

Here, too, the same explanation forces itself on our logic. The fat must first undergo cleavage and be brought down to a point where chemical structure no longer bears the individual plant stamp. In the alimentary canal the pancreatic and intestinal juices split the fat into its components, alcohol and fatty acids. Lipase hydrolyzes the fats. The soaps and alcohol that are formed are absorbed.

Here, too, the substitution of soaps and alcohol for fully formed fats will keep an animal in metabolic equilibrium. Likewise the rule holds good that the plasma of animals in whom fats are injected in the blood stream develops a ferment that splits up fats.

The synthesis of fat from the building stones takes place in the walls of the intestine whence it is carried via the lacteals and thoracic duct into the blood stream to be taken up by the individual cell and built up, knocked down or used as fuel, as suits its purpose.

We may pass with brief comment the phosphatids and nucleo-proteids of our food. The latter is the essential principle of the cell nucleus and its molecule gives the particular plant or animal cell its specific mold. These, too, are split up into their component building stones. In this category should be considered the metabolism of the purin bodies but lack of space forbids further discussion.

We now come to the consideration of that constituent of the food which is of chief importance to the animal organism—the albumens. Thanks to the researches of Emil Fischer the composition of the various proteids are fairly well known.

For a better understanding of what follows it will not be out of place to digress for a moment and clear up what the reader may have forgotten about the chemistry of these substances.

The proteins, under which the albumens are included, are highly complex substances. They consist of: Carbon, Hydrogen, Oxygen, Nitrogen and Sulphur, in more or less constant proportions, varying with the particular protein. Some also have Phosphorus and Iodine. The albumin molecule is of enormous size and its weight as compared with Hydrogen runs up into thousands, yea into tens of thousands. While no proteins have yet been produced synthetically, we know that they are built up from the relatively simple amino acids. The latter are organic acids in which one of the hydrogen atoms is replaced by the amino group  $\text{NH}_2$ .

Thus:  $\text{CH}_3\text{COOHCH}_2\text{NH}_2\text{COOH}$ .

Acetic acid. Amino acetic acid or glycine.

The albumin molecule consists of a large

number of these amino acids linked together. To use an apt simile of Adami, imagine a group of men having hooks at their wrists instead of hands. They form a closed chain, the right hook of one linking with the left hook of his neighbor. In the albumin molecule, the CO group of one amino acid is linked to the  $\text{NH}_2$  group of another. Such a series of amino acids is termed polypeptids. The number and kind of amino acids and their relative place in the chain determine the particular structure of the albumin.

From what has been said of the digestion of carbohydrates and fats it will readily be foreseen that the same process takes place with the albumins. They are split down to their building stones, the amino acids. In no other way can one conceive a transformation of the albumin which is specially constructed to fit the plant cell into one of such a vastly different mold as is adapted for the requirements of the animal cell. Or, take the case of the infant who from the proteins of the milk elaborates all of its tissues, including such highly specialized substances as hair, nails, blood; the casein, globulin and albumin of the milk are first resolved into their building stones before they are absorbed, after which they are built up into the diverse albumin molecules of the different organs and cells. By the combined action of the gastric, pancreatic and intestinal juice the proteins are reduced through numerous intermediate stages to the amino acids. It may seem strange that in the alimentary canal this process is completed in six to eight hours, while outside of the body it takes at least eight days to effect this reduction. The slow process in vitro is due to the fact that the amino acids as soon as formed exercise a retarding effect on the cleavage, which does not obtain in the body, as the amino acids are absorbed as rapidly as they are formed. In general, conditions in vivo are more favorable for rapid digestion. At the

different stages ferments nicely adjusted as to quality, quantity and time are poured out into the digestive tract.

Examination of the alimentary canal in dogs who were killed at different intervals after a meal discloses the absence of amino acids in the stomach. They begin to appear in the duodenum together with peptones.

How do we know that the peptones are not absorbed before they are reduced to amino acids, since we find both in the intestinal contents? It stands to reason that direct proof is not available. Indirectly, however, the basic principle of Abderhalden, the cleavage of foodstuffs into their building stones, has been demonstrated by a series of brilliant experiments on animals which are all the more remarkable as they record the marvelous triumph of synthetic chemistry. By a judicious mixture of amino acids to replace the nitrogenous constituents of the food, animals have been kept for months in a state of metabolic equilibrium even with a notable gain of weight. Incidentally it was found that tryptophan is one of the amino acids which is indispensable, without which nutrition cannot go on.<sup>9</sup> We see, therefore, that animals can be kept in an excellent state of health and growth by feeding them with the building stones of the carbohydrates, fats and proteins, i. e., glucose, glycerine and fatty acids, and the amino acids. The dream of the scientist to produce food artificially has come true. All these can be made in the laboratory. Emil Fischer has produced glucose by starting with formaldehyde. Glycerine and fatty acids have long been made synthetically, and the same is equally true of the amino acids.

Of course this synthetic food cannot compete with the natural either in cheapness or in taste. It may, however, be of value in medicine as a diet for patients requiring rest of the alimentary canal, in gastric ul-

cer, operations on the digestive tract, etc. Possibly it may be of value in serum therapy by removing from the serum those constituents that cause anaphylaxis. In organotherapy it will be feasible to remove everything foreign from the organ except the active principle.

It remains to consider what is the fate of the amino acids after they are absorbed. As they are never found in the blood, Abderhalden advances the hypothesis that they are built up into serum albumin in the intestinal wall and then thrown into the circulation. The albumin of the blood reaching all parts of the body, is taken up by each cell, again split down to its building stones and then built up again to fit its particular structure and function, or converted into energy by further reduction. The animal cell possesses the power of splitting down or building up food material as becomes necessary to carry on its life work.

As to the inorganic constituents of the food, the iron, calcium, sodium, etc., the very same rule of previous cleavage and subsequent synthesis holds true. This opens up an interesting subject for further research. May not some diseases supposed to be due to a deficiency in these important inorganic elements really be caused by the absence of the proper organic building stones with which the inorganic element in the body is linked? There may be enough iron and yet the globin constituent is missing. We may also ask whether rickets is due to lack of calcium or absence of the organic group with which it is united.

In conclusion, we may summarize the views of Abderhalden as follows:

**All food, whether of animal or plant origin, must, before being absorbed, be split down into its building stones. These then are subsequently built up to fit the special needs of each tissue and cell.**

*(To be concluded.)\**

*\*The next installment will treat of Abderhalden's views on the "Defective Ferments."*

## ABDERHALDEN'S PREGNANCY TEST—A PRELIMINARY REPORT.

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AND

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The basis of Abderhalden's biological test for pregnancy is the presence of proteolytic ferments in the blood serum of pregnant individuals which are capable of breaking down placental protein.

If albumin be taken into the alimentary canal it is broken down into peptones, polypeptides, and amino-acids by the action of the digestive juices and the epithelial cells lining the tract. These protein derivatives are then taken up by the blood and carried to the various organs.

If the albumin be injected parenterally, that is, subcutaneously, intramuscularly, or intravenously, ferments are elaborated in the blood which have the ability to break down this albumin. These ferments are produced either against a protein which normally belongs to the organism, such as an animal's own muscular tissue, or a foreign albumin.

Schmorl, Weichard and Veit have shown that in some cases of pregnancy syncytial elements enter the maternal blood stream. Portions of chorionic villi may, or may not, be constantly present in the blood, but every case of pregnancy has a complicated protein metabolism and a general exchange of substances between the placenta and the maternal blood which permits the entrance into the latter of protein products which have not been broken down completely into amino-acids and which cause the organism to produce proteolytic ferments to protect itself.

These ferments were proven by Abderhalden to exist in the maternal blood of pregnant individuals and not in the non-



gravid, and it is upon their demonstration that he has worked out his test for pregnancy. For their detection he utilizes two methods:

1. The optical.
2. The dialyzation.

For the optical method, using a polariscope, Abderhalden claims superiority. We are just beginning to use this method, along with the dialytic, but we are not yet prepared to report on it. The dialyzation method is the one more generally adopted and since there are many sources of faulty technic which can vitiate the results, we shall describe in more or less detail the preparation of the various reagents and our procedure in carrying out the test.

#### THE DIALYZATION APPARATUS.

The dialyzers are made by Schleicher and Schuell and should be about 16 mm. in diameter. The open end is apt to present a wrinkled opening, which constricts it, and interferes with the proper charging of the shell. To obviate this, we cut a piece off the lipped end of an appropriately-sized test tube and insert this ring in the open end of the shell, securing it in place by stitching it with silk thread and allowing the free ends to form a loop about 15 cm. long. This loop and the firm end allow great ease in manipulating the shells without the necessity of ever touching them with the hands. The diffusion shells are stiff and hard when received and it is necessary to soak them in water for a few hours until they become softened. When soft, place them in boiling water for not more than thirty seconds and then store them in a suitable receptacle containing chloroform water and layer the surface of the water with toluol. Each diffusion thimble must be tested most carefully before using it in a test for its permeability to peptone and its impermeability to albumin. Regarding these characteristics the shells are very variable. We obtained

nine good ones out of twenty-three tested.

For dialyzing vessels we find 150 mm. by 25 mm. test tubes with bases very convenient. These are well cleaned, plugged with cotton and sterilized.

To test the shells for their impermeability to albumin, proceed as follows: Five cubic centimeters of perfectly fresh egg-white are made up to 100 c.c. with distilled water. Shake thoroughly and use only the clear liquid after the flakes have settled. Blood serum may be used in place of the egg albumen.

Place 2.5 c.c. of this solution, by means of a long, slender-stemmed pipette, into each shell, carefully avoiding touching the outside. Cover the contents with about 1 c.c. of toluol. Now place the shells in the dialyzing tubes, to each of which has been added 20 cc. of sterile, distilled water and layered with about 2 c.c. of toluol. The cotton plugs are replaced and the tubes are put into the incubator at 37° C. for about 16 hours.

At the expiration of this time the tubes are removed and 10 c.c. of the dialyzate are withdrawn from each tube and placed in clean, dry tubes. To each 10 c.c. add about 2.5 c.c. of a 33% sodium hydroxide solution and mix thoroughly. This usually causes some turbidity, but it does not interfere with the test. Now layer the alkalized dialyzate with 1 c.c. of a 0.2% aqueous copper sulphate solution. Note carefully the contact zone, and the appearance of the faintest trace of a violet to rose color indicates the presence of albumin, which shows that the tested shell is permeable and therefore is unfit to use and should be discarded. If the reaction be at all doubtful, the shell should be thrown away. In testing the dialyzate for albumin, Abderhalden recommends using the biuret reaction because it is more sensitive than ninhydrin.

The shells which have been proven impermeable to albumin should next be tested for their permeability to peptone.

After their contents have been thrown out, the shells are placed in running water for at least half an hour and then immersed in boiling water for a few seconds.

To each shell add 2.5 cc. of a 1% silk peptone (Seiden-peptone, Hoechst or Hoffmann-LaRoche) solution. This is layered with toluol and the shell placed in a dialyzing tube containing 20 c.c. of sterile, distilled water surmounted by a layer of toluol. Incubate at 37° C. for about 16 hours and then test 10 c.c. of the dialyzate for peptone. The 10 c.c. are removed by closing a pipette with a finger, plunging through the toluol layer, blowing gently to remove any toluol from the inside of the tip of the pipette, and then sucking up the required amount.

To a dry, clean test tube add exactly 0.2 c.c. of an exact 1% aqueous ninhydrin solution by means of a capillary pipette. The ninhydrin solution is prepared by shaking the contents of a 0.1 gm. vial into a sterile container. Some of it remains in the vial and this is obtained by rinsing the vial with successive amounts of water. The ninhydrin does not go into solution readily, accordingly it is well to place the container in the incubator until it does and after removing and allowing it to cool make the solution up to exactly 10 c.c. The solution is not absolutely stable. It may become infected. It is also sensitive to light, so that it should be kept in brown containers.

After adding the 10 c.c. of the dialyzate to the 0.2 c.c. of ninhydrin, a boiling rod is placed in the test tube. This is absolutely necessary, because only exactly similar boilings make possible a color reaction which is comparable. The boiling rods are solid glass rods about 10 cm. long and 0.5 cm. in diameter. They are boiled in distilled water and after drying in the hot air oven are kept in glass-stoppered bottles. They should never be touched with the

hands and should be placed in the test tubes with sterile forceps.

The boiling is now begun. The manner in which it is done is of the utmost importance. It must be energetic, yet any bubbling over or unequal evaporation should be avoided.

It is advisable to use test tubes which are marked to show 10 c.c., then, when all the contents of the tubes have been boiled, it is easily determined if they have been reduced equally in amount and so fulfill the important postulate of exactly similar boiling.

The test tube is held in the flame and beginning with the appearance of the first bubbles on the wall of the tube, which usually occurs in a few seconds, boil exactly 1 minute. After 10 to 15 seconds the contents boil lively. As soon as this happens, hold the tube on the edge of the flame, which should be turned down to about half of its original height. In this way the boiling may be kept up continuously and without boiling over. Do not take your attention off the boiling for a fraction of a second. Everything depends on the correct carrying out of this procedure. If boiled too freely, no reaction may occur. If the tests are boiled with varying intensity, then the colors will be of different shades, thereby causing incorrect results.

After waiting half an hour, the intensity of the color of the various tests is compared and a certain shade is found to predominate. All tests which are paler or deeper are noted and the corresponding shells are discarded. It is necessary to be strict in these determinations, because otherwise errors will occur in the tests proper. For example, it may happen that serum alone and serum plus placenta contain exactly equal amounts of dialyzable substances which react faintly with ninhydrin, yet, in the test, the dialyzate of the serum plus placenta gives a positive reaction, because the shell used was more permeable

to protein metabolic products than the shell of control.

The shells which are equally permeable to peptone are emptied of their contents, placed in running water for at least half an hour, dipped in boiling water for a few seconds and then placed in sterile tubes containing sterile water and an equal amount of chloroform and toluol and securely stoppered. They are now ready for use, but should be retested about every four weeks.

#### PREPARATION OF THE PLACENTA.

It is of fundamental importance that the placenta be correctly prepared. The principle of it is to obtain a material which contains coagulated protein and which is absolutely free of any dialyzable substances which can react with ninhydrin.

The material must be absolutely free of blood. The membranes and umbilical vessels are removed and the remaining portion of the placenta is mechanically freed of clots. It is then cut up into pieces about 2 cm. in diameter. The pieces are then placed upon a sieve and flushed with running water and each piece is carefully squeezed. From time to time the pieces are pressed in a cloth. Any pieces which still contain clots are discarded and those remaining are placed in a mortar and finely ground with a pestle, adding fresh water continually. This gets rid of the last traces of blood. After grinding, it is well to pick out any pieces of connective tissue and throw them away.

The material is weighed and then transferred to an enameled dish which contains about 100 times its bulk of boiling distilled water. Five drops of acetic acid are added to each litre of water. The boiling is continued for 10 minutes. Then the water is poured off through a sieve and the remaining tissue is thoroughly rinsed for about 5 minutes with distilled water. In the meantime more water, without the addition of acetic acid, is brought to boiling and the

tissue is placed therein and boiled 10 minutes. The boiling, the decanting, the rinsing and the renewed boiling are repeated about six times without interruption. If it becomes necessary to interrupt the process the boiled water should be immediately covered with a layer of toluol.

Beginning with the seventh boiling, add only about 5 volumes of water. The smaller the amount of water used, the more delicate the ninhydrin test. However, it is necessary to add enough water, so that active boiling may last for 5 minutes without danger of burning the tissue. Some of the water is now filtered off and to 5 c.c. of it is added at least 1 c.c. of 1% ninhydrin solution and boiled for 1 minute. Only when the filtrate does not show the faintest trace of a violet color after  $\frac{1}{2}$  hour should the placenta be considered suitable to use. If the test be positive, pour off the water, add 5 volumes of boiling, distilled water, boil for 5 minutes, filter and again test the filtrate with ninhydrin. These procedures should be repeated as often as it is necessary until the placental material is snow-white and is absolutely free of extractable, ninhydrin-reacting substances, as shown by testing 5 c.c. of filtrate with at least 1 c.c. of 1% ninhydrin. When this point is reached, it is immediately placed in a sterile container with a ground glass stopper. To it is added a little sterile, distilled water and much chloroform and toluol. The container should be so filled that the stopper dips into the liquid. A carefully prepared and preserved placenta should remain usable indefinitely. Contamination by micro-organisms alone renders it unfit. Only sterile forceps should be used to remove any of it and under no circumstances should any be returned to the jar. Keep the jar always filled with chloroform and toluol and when not in use store it in a refrigerator.

#### SECURING THE BLOOD SERUM.

Strict attention to details is absolutely



necessary to obtain the blood correctly and to secure the serum in proper condition for a test. The blood should be drawn by puncturing a convenient vein with a perfectly dry needle under aseptic precautions and from 15 to 20 c.c. obtained. The blood should be permitted to clot spontaneously. Allow it to stand at room temperature for about 1 hour and then place it in a refrigerator until sufficient serum has separated. This usually takes about 4 hours. If, however, at the end of this time it has not separated sufficiently, centrifugalize for from 5 to 10 minutes. Any measure used to hasten the separation of the serum risks causing hemolysis and on this account it is better not to centrifugalize the blood.

After the serum has been obtained aseptically and remains sterile, it must fulfill the following three requisites before it should be tested:

(1) It must contain as few as possible dialyzable substances which will react with ninhydrin. This is attained by taking the blood during the fasting period, preferably before breakfast. There is always a large amount of such substances in the following cases: where there is protein katabolism; where there is breaking down of tissue; where there is absorption of exudates and transudates; in carcinoma and sarcoma; in all purulent processes; and, finally, in cases having hemorrhages.

(2) It must be absolutely free of hemoglobin. When in doubt, verify with a spectroscope.

(3) It must be absolutely free of any formed elements. This requisite is frequently neglected. A serum may appear perfectly clear and still contain billions of erythrocytes. To obviate this, the serum should be centrifugalized, pipetted off from the sediment and again centrifugalized. If any corpuscles be allowed to remain in the serum, hemolysis will take place in the diffusion shell during dialy-

sis, with the liberation of proteolytic ferments, and an incorrect result will occur.

In sending away for a test, only serum should be used and it should be centrifugalized upon receipt. Abderhalden states the serum should not be over 12 hours old before putting up the test. Williams and Pearce say it will retain its potency, when kept under proper conditions of temperature, for at least 7 days.

#### DESCRIPTION OF A TEST.

All utensils must be clean and sterile. Weigh out in a small beaker the required amount of placental material, which should be removed from the preserving container with sterile forceps and under no circumstances should any excess be returned to the container, and wash it thoroughly with two changes of sterile, distilled water and drain completely. This gets rid of most of the chloroform and toluol in which it has been stored. Now add 5 volumes of sterile water to the beaker and bring to boiling. Continue boiling briskly for about five minutes, then filter off into a large test tube not more than 5 c.c. and add to it at least 1 c.c. of a 1% ninhydrin solution. Boil the mixture for 1 minute and then place the test tube in a rack for observation. If at the end of 30 minutes there is not the faintest suspicion of a violet tinge, the placental material is suitable for use. If, however, the test be positive, then pour off the water, rinse the placenta with distilled water, decant, and again add 5 volumes of water. Boil for 5 minutes, filter, and test the filtrate. These steps must be repeated as often as necessary until the filtrate remains colorless after testing with ninhydrin. The serum, after being centrifugalized twice, is examined in a spectroscope for the presence of hemoglobin.

A diffusion shell is removed from its container by means of the silk loop and grasping the glass-ringed end with a pair of sterile forceps, it is inverted and emp-

tied of its contents. Replace the shell in its container, allowing it to float upon the surface of the liquid. This holds the shell in a convenient position to charge.

To the first shell, add approximately 0.5 gm. of placenta and 1.5 c.c. of the serum to be tested and layer with about 1 c.c. of toluol. Extraordinary care should be exerted not to allow any of the placenta or serum to come in contact with the upper part or the outside of the shell. If there be any doubt, close the end of the shell with a finger and rinse well in running water. After charging, the shell is lifted out of its tube and transferred to the dialyzing tube, to which had been added 20 c.c. of sterile, distilled water and the surface covered with a layer of toluol about 0.5 cm. thick. Close the tube with its cotton plug. In using these proportions in a 150 mm.  $\times$  25 mm. tube, it will be found that the lower border of the toluol in the dialyzing tube usually is on the level with the middle of the layer within the shell. This is of value in preventing contamination of the dialyzate due to breaking down of any particles of placenta or serum which might have become lodged above the level of the toluol layer in the shell. The shells should never be charged in their dialyzing tubes.

To the second shell add 1.5 c.c. of the serum, layer with toluol and place in a dialyzing tube to which has been added water and toluol.

To the third tube add approximately 0.5 gm. of placenta and 1.5 c.c. of sterile, distilled water. Layer with toluol and place in a dialyzing tube to which the water and toluol have been added.

After the tubes are securely stoppered and labeled, they are placed in an incubator at 37° C. for about 16 hours. They are then removed and the dialyzates examined. The layers of toluol should still be present, which insures equal avoidance of evaporation and contamination.

Ten cubic centimeters are removed from each tube, care being taken to avoid getting any toluol in the pipette, and placed in a large test tube to which has been added 0.2 c.c. of a freshly-prepared 1% ninhydrin solution and a boiling rod. It is not permissible to wash out the pipette and use for the next tube. It is necessary to have a clean, dry pipette for each individual test. The test tube is now heated for exactly 1 minute, as previously described, and afterwards placed in a rack for observation. At the end of 30 minutes the reactions should be as follows:

Test tube No. 3: the placenta control. Colorless.

Test tube No. 2: The serum control. Colorless.

Test tube No. 1: The test proper. Colorless or colored, depending on whether the tested serum lacks a sufficient quantity of proteolytic ferments capable of splitting up the placental protein or possesses them. The shells which give a positive dialyzate are again tested for their impermeability to albumin before a final decision is reached on the test.

The above reactions occur in the ideal test. In practice, however, it is not at all rare to get some coloration in the serum control (Test tube No. 2) due to the presence of ninhydrin-positive substances in the serum. This usually occurs when the precaution to draw the blood during a fasting period has been neglected. It may be due also to any of the causes mentioned under the head of the first requisite for obtaining the serum. However, if the violet color in the test tube with serum plus placenta is more intense than that of the serum control, the reaction should be considered positive.

Another irregularity, encountered in sera from non-pregnant individuals, is a positive reaction in the test dialyzate, while both of the controls are negative.

This is due to the presence of a sufficient quantity of ferments in the serum possessing the ability to break down the placental albumin. In our series of cases, this result has occurred several times.

At present we are putting up, as a routine control, coagulated egg albumin plus serum, to determine how many of the sera contain ferments able to digest pro-

tein other than placental. In six such tests only one serum was able to break down the egg albumin. This serum (Test No. XX.) was purposely hemolyzed before testing and a positive dialyzate was obtained in the test proper, the serum control and the albumin control. Later, we shall use in a similar manner proteins obtained from uterine muscle, kidney and liver.

## PREGNANCY POSITIVE.

No.	CONDITION.	Placenta and Serum.	Serum and Water.	Placenta and Water.	Serum and Egg Alb.	REMARKS.
I.—9th month .....	Faint Violet	Clear	Clear	.....	.....	
II.—10th month .....	Violet	Clear	Clear	.....	.....	
III.—5th month .....	Violet	Clear	Clear	.....	.....	
IV.—7th month .....	Violet	Clear	Clear	.....	.....	
V.—9th month .....	Violet	Clear	Clear	Clear	.....	
VI.—7th month .....	Violet	Clear	Clear	Clear	.....	

## PRESUMABLY OR PROBABLY PREGNANT.

VII.—Menstruation 8 wks. ago .....	Violet	Clear	Clear	.....	Subsequent exam. shows result correct.
VIII.—Missed period 5 days .....	Clear	Clear	Clear	.....	.....Patient lost track of.
IX.—Missed period 5 days .....	Clear	Clear	Clear	.....	.....Subsequent history unknown.
X.—Lactating. Pregnancy suspected ...	Faint Violet	Clear	Clear	.....	Serum hemolytic, condition still unknown.
XI.—Married 2 mos. ago; flowed $\frac{1}{2}$ day 10 days ago...	Violet	Clear	Clear	.....	Has since mens. profusely, possibly very early abortion.
XII.—Missed period 4 days ago .....	Violet	Faint Violet	Clear	.....	Serum hemolytic; patient presumably pregnant.
XIII.—Same as XII. ...	Violet	Clear	Clear	.....	Repeated with non-hemolytic serum.
XIV.—Menstruation 3 mos. ago .....	Violet	Violet	Clear	.....	Serum hemolytic; patient probably pregnant.
XV.—Same as XIV. ...	Violet	Clear	Clear	.....	Repeated with non-hemolytic serum.

## POST PARTUM.

XVI.—3d day of puerperium .....	Violet	Faint Violet	Clear	.....	.....
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## DEFINITELY NOT PREGNANT.

XVII.—Male .....	Clear	Clear	Clear	.....	.....Six hours after eating.
XVIII.—Male, same as XV. ....	Violet	Clear	Clear	.....	....Two hours after hearty breakfast.
XIX.—Male, same as XV. ....	Clear	Clear	Clear	.....	Serum taken before breakfast not hemolyzed.
XX.—Male, same as XV. ....	Faint Violet	Faint Violet	Clear	Faintest Violet	Blood purposely hemolyzed with distilled water.
XXI.—Male .....	Faint Violet	Faint Violet	Clear	Clear	....Blood purposely taken after eating.
XXII.—Double pyosalpinx miscarriage 59 days ago .....	Violet	Clear	Clear	.....	.....Blood taken just after eating.
XXIII.—Same as XXII. ....	Violet	Clear	Faint tinge	.....	.....Blood taken before breakfast.
XXIV.—Large fibroid uterus .....	Faint Violet	Clear	Clear	.....	.....Blood taken after eating.
XXV.—Same as XXIV. ....	Clear	Clear	Clear	.....	.....Blood taken before breakfast.
XXVI.—Tubercular woman .....	Clear	Clear	Clear	.....	.....Began menstruating yesterday
XXVII.—Male, pulmonary tuberculosis...	Faint Violet	Clear	Clear	.....	.....Serum hemolytic.



We have tried the test upon six women who were definitely pregnant, from the fifth to the tenth month, and in each instance the reaction was positive—once on a woman in the third day of the puerperium, with a positive result.

It was tried seven times with the serum of women who had missed their menstrual period from four days to three months; that is, were presumably pregnant, and in this series there was a positive result in five, negative in two. It is too early to tell definitely regarding the correctness of these results, but as far as we are able to judge there was but one error. In this instance the blood had become hemolized.

It was tried eight times upon individuals known definitely not to be pregnant, and in this series five of the eight were positive. Such results without explanation would render the judgment of the Abderhalden test as of little value; one, a woman with a large, fibroid uterus, gave a faint violet reaction. Her serum, however, showed hemolysis, and had been obtained shortly after eating, both of which are conditions Abderhalden warns against, and a subsequent test from the same patient under favorable conditions (before breakfast) gave a negative result. Two were from the blood serum of men after eating. Two subsequent tests from one of these before breakfast were negative, the other was not repeated; a patient with pulmonary tuberculosis showed a faint tinge, but in this instance, too, the blood had become hemolized. The last was from a woman with a double subacute pyosalpinx which in spite of the fact that every precaution was observed was positive upon two occasions. I may add that Freund has reported positive findings in cases of pus tube and Abderhalden states that in all purulent processes large amounts of dializable ninhydrin positive substances are present.

There has been, therefore, in our series of twenty-seven tests, but one in which,

when every precaution was observed, the wrong diagnosis was made. From the result of this small preliminary series we would consider the test of great diagnostic value and when perfectly performed to be reliable.

If the test is trustworthy, it is of inestimable value. By waiting, it is true, we can always reach the right conclusions as regards pregnancy. Often, however, a diagnosis is desired immediately.

In the first two and one-half to three months of gestation, bimanual examination adds little to our presumptive evidence, and we are unable to make a positive diagnosis. The Abderhalden reaction should be positive between the fifth and sixth week. Case XII. of our series was positive when the woman had missed her menstruation but four days.

Case XIV. was one in which the blood test was of definite clinical advantage. A woman whose menstruation had previously been regular, missed three periods and was presumably pregnant, bleeding began. She was stout and the pelvic examination was unsatisfactory. I did not know whether she was menstruating or having a threatened miscarriage. Under rest in bed and sedatives the bleeding stopped in four days and the Abderhalden test is positive.

Case X is one which shows a positive reaction, the woman is lactating and pregnancy is suspected. This is one of the cases in which the blood had hemolyzed and a subsequent test will be made.

Hardly, a gynecologist of note, has not had an experience in which the abdomen was opened to do a hysteromyomectomy to discover the woman pregnant, or even gone so far as to remove the uterus to find it to be a normal pregnancy. More difficult is the diagnosis of pregnancy associated with myomata. Other tumors may simulate pregnancy, or hydramnios be difficult to differentiate from arcites or tumor. In stout people even an advanced pregnancy

may be difficult to determine. The test has been shown to be of practical value in the differentiation of extra uterine pregnancy from other conditions. Schwartz, in an article has mentioned its value from a medicolegal aspect when in early cases a pelvic examination may be undesirable, would reveal nothing or shortly after a criminal operation has been performed, the reaction would show.

The test should be positive from ten to fourteen days post partum except in cases where there is retained placenta or chorio-epithelioma, when one would naturally expect the reaction for an indefinite period after delivery.

A reaction in which such minute care and precautions are necessary, that the least slip in technique will vitiate the result makes it a test which requires training and practice. Possibly the great chance for error may lessen its practicality. We are able to say in our experience that more reliance is to be placed upon a negative result than upon a positive one. Clinically we consider the test of great value and in the near future hope to report from a larger series of cases.

Boosterism is a heart stimulant. It is a strychnia for doubt, a digitalis for failure. It brings joy and faith and a strong hand-grasp. Learn to know your brother, to believe in him, and you will liberate sunshine you have kept hermetically sealed. Work with an open heart and you will succeed—there is so little competition.—Rock Sleyster.

#### DECIDED VENUS HAD ADENOIDS.

The extent to which the modern child is educated in matters of hygiene appears from a recent episode in a Boston school:

The class had visited the art museum and the teacher wished to learn what the children had observed and how they were impressed. The subject of the moment was the exquisite head of Aphrodite, one of the chief treasures of the museum. A little boy, who frantically waved his hand, was called upon. He announced triumphantly:

"I noticed she had adenoids!"

"Why, Peter," exclaimed the shocked teacher. "What do you mean?"

"She keeps her mouth open all the time," was the reply.—Youth's Companion.

#### ACIDOSIS.\*

CHARLES N. MEADER, M.D., DENVER.

The subject of acidosis may appear somewhat trite and hackneyed and any present consideration of its significance superfluous. Certain aspects of it, however, seem worthy of greater emphasis than they have often received; certain clinical and experimental data in various metabolic disturbances have been developed and throw sidelights upon it, so that a brief survey of the whole may be not without interest and affords occasion for this paper.

The three substances, boxybutyric acid, diacetic acid and acetone are commonly and conveniently grouped together under the general term acetone bodies; acidosis is loosely used in a general sense to denote an increased excretion of one or all; and the presence of any one of these substances may be considered as of the same general portent as that of all together. Their chemical relationship is generally accepted as a derivation, by oxydation, of diacetic from boxybutyric acid, of acetone by a similar process from diacetic. Of the three possible original sources—fats, proteids and carbohydrates—the latter may be excluded as a precursor of the acetone bodies. Their formation from the proteids has been proved possible, but the exact proportion thus derived remains obscure, is probably small; and the chief rôle is still to be ascribed to the fats. The reactions involved are still under investigation, but the simplest and perhaps most probable is by a series of various splits by which caproic acid results from the higher fatty acids; caproic acid, by oxydation, forms butyric acid, which by the same process yields boxybutyric. Dakin<sup>1</sup> using hydrogen peroxide as an oxydising agent has obtained acetone from butyric

\*Read at the Annual Meeting of the Colorado State Medical Society, Oct. 7, 8, 9, 1913.

acid, from boxybutyric acid and even from the higher fatty acids, thereby confirming oxydation as a possible mechanism. The site or sites at which this formation takes place are not entirely clear, but it is certain that the liver is of importance. Perfusion of excised organs has failed to show any acetone production in lung, muscle or kidney, but does show it constantly in the perfused liver.<sup>2</sup> Moreover, Wakeman and Dakin<sup>3</sup> have found that the digestion of boxybutyric acid with liver tissue or liver juice results in acetone production and that its amount is markedly increased by the addition of blood or of oxyhaemoglobin, but only slightly aided by serum—again suggesting an oxydative process. The mechanism by which such oxydation takes place is indicated by their further work, which showed that if such a digestion mixture is subjected to 100° of heat, no acetone forms, that the reaction is aided by weak acids, but checked by weak alkalis, and that liver juice free from cells may produce it—all well recognized characteristics of known enzymatic reactions. To sum up, then, it may fairly be said that the acetone bodies are derived chiefly from the fats, that such derivation is known to be possible by a series of oxydations which have so far been found active only in the liver, and that this process is probably dependent upon enzyme action.

The conditions under which the acetone bodies may be found in the urine are many, and the wide variations in their clinical pictures striking. The excretion in health—estimated at about three centigrams per twenty-four hours—needs no further comment. Bordering upon a state of health is that of starvation, a semi-pathological condition in which the amount may reach even as high a level as that seen in diabetes. The acetonurias of various psychoses are accompanied by a diminished food intake and are probably

to be attributed to the element of starvation. So also with those of chronic wasting diseases, notably cancer and tuberculosis. Among definitely pathological conditions diabetes comes first in mind both by reason of the constancy of acetone-body production and the large amounts in which they are frequently present. The acetonuria of acute infectious diseases is familiar. Reiche<sup>4</sup> reports it in 65 per cent of diphtheritic children and found that, though the percentage rose somewhat with increased severity of the disease and increased temperature, yet 50 per cent of the very mildest cases upon an abundant carbohydrate diet, excreted acetone; whence he concludes that the phenomenon is due to a specific toxic effect. The findings and conclusions of Harris<sup>5</sup>, Meyer<sup>6</sup> and others in diphtheria, scarlet fever and measles are substantially the same. The frequently observed acetonuria of acute gastro intestinal diseases in children belongs perhaps partly in this group, partly in that of starvation. A distinct group may be made up of those conditions of known or suspected toxic, probably non-bacterial, origin among which eclampsia and its allied conditions are of prominent interest. According to Ewing and Wolf, Wells, Taylor and others, eclampsia, toxemia of pregnancy and acute yellow atrophy are all to be attributed to the action of the same or closely related toxins, and all show a very frequent acetonuria. Another condition which may be brought into relation with those preceding is that of delayed anaesthetic poisoning, chiefly following chloroform, but seen occasionally after a variety of anaesthetics, in which acetonuria is a customary symptom. Closely allied, both clinically and pathologically, is phosphorus poisoning, where again the presence of acetone is early and constant. Less obviously related is the recurrent vomiting of children, but certain clinical symptoms



and pathological findings suggest strongly a toxic cause at least similar, and here acetone excretion is so constant and considerable that it is still held by many to indicate the cause of the attacks. The administration of substances of known toxicity may be followed by acetonuria. Among these may be mentioned antipyrin, atropin, benzol, betanophthol, enure, coal gas, extractum filicis, heroin, lead, opium, phloridzin and sulphuric acid—a list of widely varying properties, of which some are known to act as protoplasmic poisons, others present no obvious relations to changes in the liver or in sugar metabolism.

There is, then, a considerable array of very different abnormal states in which this symptom may appear constantly or commonly; in some of these it is casually accepted as a by-phenomenon of little moment; in others it dominates the picture. In an attempt to reconcile its presence under such varied circumstances it is of interest to review briefly certain points in the pathology and chemistry of these conditions. The post-mortem findings in eclampsia, in pernicious vomiting of pregnancy, acute yellow atrophy, phosphorus poisoning and chloroform poisoning are closely related. The chief changes are found in the liver and consist in cellular degenerations varying somewhat in degree and distribution, but of the same general character. The pathology of recurrent vomiting in children is less striking and the data naturally scanty, but of six reported autopsies all save one showed liver changes similar to those of chloroform poisoning.<sup>7</sup> Among acute infectious diseases attention need only be directed to the common focal and central necroses of the liver. In sharp contra-distinction to the pathology of what may be termed the toxic group is that of diabetes with its long-continued, constant and abundant acetone production, but an entire absence

of significant liver changes post-mortem. And in starvation acetone in well-marked amounts is produced by a very few days' carbohydrate deprivation in strong, healthy subjects, long before terminal liver changes appear. In the first group there is no lack of assimilable carbohydrate, but a more or less damaged liver; in the second an intact liver, but a deficient carbohydrate intake or utilization, or both.

Turning to chemical features, the relation of carbohydrate administration to acidosis is of first interest; its capricious unreliability in reducing acetone is a matter of common clinical experience. In starvation, save in the later stages, so small an amount as 100 grams of sugar can cause a marked drop in its excretion, while the same amount daily can wholly prevent its appearance. In diabetes the effect of carbohydrates is often difficult to interpret, owing to the high degree of individual variation among such patients and the nature of the diet necessary. According to von Noorden, however, the starches and sugars generally exercise a similar sparing influence up to the limit of their assimilation while in those cases in which they are quantitatively eliminated no reduction in acetone is obtained. In the toxic group, on the other hand, nothing approaching a constant effect is seen; in chloroform poisoning and its allied conditions carbohydrates may produce a drop in acidosis, but more often no result follows; the acetonuria of acute infectious diseases is found with nearly equal frequency among mild cases upon a sufficient carbohydrate intake, and the storms of recurrent vomiting arise abruptly upon a full normal diet. There exists, then, from this standpoint also a rather sharp dividing line which corresponds somewhat closely to the presence or absence of post-mortem liver changes, and the facts suggest that the ability of

assimilable carbohydrate to diminish or prevent acetone excretion is a feature chiefly of conditions in which slight or no liver damage is present and becomes a steadily less constant factor with the presence of increasingly constant and extensive liver lesions.

The liver mechanism by which such sparing action is brought about is still obscure; the usual statement that the "fats burn better in a flame of carbohydrates" is unsatisfactory, and the attempt to assign a more definite mechanism by the conception that they assist by furnishing a more readily available supply of oxygen is yet far from proven. Investigations of the state of bodily oxydations in acetoneuric diseases have had inconclusive and conflicting results. The presence of a normal or decreased carbon dioxide content of the blood, of a normal or diminished respiratory oxygen exchange, has been sought; the urine has been studied to establish an increased or absent excretion of lactic acid, an abnormal partition of neutral and sulphate sulphur, an unusual relation of creatin to creatinine, or of total and ammonia nitrogen; but all without furnishing definite or conclusive evidence for or against the existence of a diminished oxydation in these conditions. Against such a theory it may be noted that acetone body formation is a process experimentally favored by an adequate supply of oxygen; an inadequate supply should then be expected to result in a decreased rather than an augmented formation and output. The work of Wakerman and Dakin, already noted, makes it probable that enzyme action is an important factor. Whether the liver carbohydrates act as a regulator of such enzymes, either by furnishing oxygen or by some inherent chemical influence; whether the same toxins which cause the liver changes affect these enzymes directly, or act only by effecting a mobilization of liver car-

bohydrates; or whether the changes in the liver cells are directly responsible for alterations in their secreted enzymes—all these remain open questions. Of interest in this direction are certain data recently worked out. The glycosuria following Bernard's piqure, which is accompanied by acetone excretion, has been shown to depend upon the removal of available liver glycogen<sup>8</sup>; various observers have found a diminished levulose tolerance in infectious diseases which Schmidt<sup>9</sup> has shown may be experimentally caused by bacterial toxins with an accompanying diminution of the glycogen store of the liver; and Frank and Isaac<sup>10</sup>, with others, have found both liver glycogen and blood sugar much decreased or absent in phosphorus-poisoned animals. Further, a rise in plasma lipase has been demonstrated<sup>11</sup> during liver destruction after phosphorus, chloroform and hydrazine poisoning; also in eclampsia and various infectious diseases, but not in pernicious vomiting. Much work remains to be done in this part of the field, however, and lines of advance can only be indicated. On the other hand, evidence of an intimate relation between the liver and acetone metabolism as well as between a perverted acetone metabolism and certain types of liver disturbance is less equivocal, and its existence may be taken as firmer ground, established by a considerable body of clinical and experimental data. It may be considered, then, that there are two chief factors in the promotion of such metabolism—a proper available concentration of carbohydrate in the liver and the state of the liver cells themselves, and that any modification of either factor may be such as to result in acetoneuria. Such a modification exists in diabetes as an altered assimilability of the carbohydrates; in what has been termed the toxic group it is present as a change in the liver cells with a resulting disturbance of their power to

regulate acetone production, whatever the finer mechanism of such regulation may prove to be.

Certain data upon the metabolism of creatin and creatinine deserve more than perfunctory mention and gain an added interest in connection with this subject from the fact that an abnormal creatin excretion is to be observed in many of the same conditions in which acetonuria is present. Such an excretion is found in eclampsia and in the toxemia of pregnancy; in starvation, where it is promptly reduced by carbohydrate administration<sup>12</sup>; in fevers, especially those of the acute infectious diseases, and Mellanby,<sup>13</sup> as well as Sedgwick,<sup>14</sup> have reported cases of recurrent vomiting in which a creatin excretion was constantly observed and rose sharply on the day of the attack. It has also been generally found in human diabetes and in dogs during phloridzin glycosuria. Remembering the predisposition of children toward acetonuria, it is interesting to note that creatin has been found present in the urine of a series of healthy children,<sup>15</sup> and that the livers of young dogs, perfused with butyric acid, form notably larger amounts of acetone than those of older animals.<sup>16</sup> While no significant deductions are at present possible, these analogies are interestingly close, and further work in this field may throw light upon that of acetone metabolism.

It is not the purpose of this paper to enter extensively upon the subject of therapeutics, because no methods for counteracting the effect of toxins upon the liver or for renewing a failing carbohydrate assimilation are available, and the customary alkali and carbohydrate administration must remain our most useful palliative measures until such time as future work may demonstrate efficient means for reaching this deeper-lying mischief, of which acetonuria is but a single symptom.

An example of the result which such actual casual therapy may accomplish is to be seen in the rapid decrease of diphtheritic acetonuria following the injection of anti-toxin. It is of course obvious that the diabetic, draining himself of alkali by a high acid excretion, stands in urgent need of alkali replenishment, of carbohydrate, too, if he can utilize it, and it is in this class of cases that alkalis and carbohydrates commonly succeed, until the continued drain overpasses the limit of safety. In the toxic group, on the other hand, if we can accept the paramount rôle of the liver in acetone metabolism, it is not difficult to conceive that this already more or less damaged organ should be unable to efficiently regulate the process, however much alkali and carbohydrate may be supplied; and the usual complete lack of influence of these agents in this class of cases becomes an expected rather than a surprising result.

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### DISCUSSION.

**J. N. Hall, Denver:** This paper, which I think we ought all to appreciate very much, brings out one thing in connection with the danger that there is in delaying or allowing patients who have a blocked pylorus to go on indefinitely, until they lose a great amount of weight because of their condition. If a gastro-enterostomy is not done for those patients, the basis is often laid for acid intoxication.

As an illustrative case, some four or five years ago I saw a young lady, a nurse in St. Luke's Hospital, who had weighed 170 or 180 pounds. She developed rather acutely an ulcer of the pylorus, as we learned at the operation, and following that a complete blocking, and lost, I should say offhand, something like 60 pounds in weight. The danger of operation did not seem to any of us to be very great, and the surgical part of the operation, in Dr. Craig's hands, went through without any trouble. Yet, within four or five days that girl died from acid intoxication. There is a big risk in allowing patients with pyloric obstruction to linger along and drag out a slow course. They should be operated upon before they get to a place where there is danger in the operation.

**Moses Collins, Denver:** In connection with this paper I just want to report a case which has some bearing on the subject, which to me is of great interest. Early this year we had a case sent to us which, shortly after admission, fell into a deep coma, and upon examination of the urine, we found a high degree of acetone poisoning. The patient died within twenty-four hours after the onset of the coma. Diabetes is a complication which ought to be looked for frequently in tuberculosis. It is present every now and then, and especially in advanced cases. This case which had been sent to us was apparently one of diabetic complication, which was entirely overlooked by the examining physician. The urine had been reported normal, which of course could not be possible in a case as advanced as this was, and which must have contained a large amount of sugar at the time the patient left home.

**W. A. Jayne, Denver:** I desire to compliment Dr. Meader on the excellence of his paper. He has presented one of the most intricate disorders of metabolism in a very clear way and summed up for us the latest views on this subject. The condition of acidosis is of intense interest to us all since it is one that is now known to occur far more frequently than formerly supposed. It is not fully understood and too often it escapes recognition.

Each of us I think has met with it in one or another of its phases, and I have been so unfortunate as to meet with it several times following operation. I have seen it follow operation for appendicitis in a tubercular subject, illustrating Dr. Collins' statement that it is often observed in advanced cases of tuberculosis, and I have also met with it following the

operation of gastro-enterostomy, corroborating Dr. Hall's observations.

The subject of acidosis is one of extreme importance, and I believe all steps tending to its elaboration and a clearer understanding of its relations to metabolism are worthy of commendation. I am very glad indeed to have had the pleasure of listening to Dr. Meader's paper.

**Charles H. Meader, Denver:** I am very glad that the discussion has taken up the clinical side of the matter, because it is difficult in a short paper to consider both the clinical and theoretical sides.

Foot Note A.

In relation to Dr. Hall's discussion, it is of interest that several observers have found in starving animals liver lesions which closely resemble in general structure those of chloroform poisoning; so that in these late stages of starvation we may have the factor of liver damage added to that of carbohydrate deprivation, and treatment rendered correspondingly more difficult.

Acidosis in asphyxia, of which Dr. Parsons spoke, can also be attributed to the liver in that in this condition we have an altered cellular metabolism, such that the cells are unable to prevent the excessive formation of acetone bodies.

Fischer's theory of acid formation in nephritis is concerned with a different type of acid intoxication and is hardly to be brought under the restricted term acidosis as at present used. His theory deals chiefly with the kidney and with the effect of acids upon the kidney. All nephritides and all oedemas are to be attributed to the presence of too abundant acid in renal or other tissues, and are to be relieved or cured by the administration of alkali. The consistent absence of both oedema and nephritis in the acidosis associated with the presence of acetone bodies separates this latter type rather sharply from that dealt with by Fischer; although I believe his theory has been extended to account for the liver lesions of eclampsia.

What I wanted to bring out in this paper is that we should not expect to get results with either alkalis or carbohydrates in the type of case in which the liver is actually damaged. The cells that are able to protect the body from acetone are already damaged, and unable to perform their functions, and with this in mind, we shall be less often disappointed at getting poor results through the use of alkalis and carbohydrates.

The rapid increase in medical knowledge may render a young man of thirty a competent teacher for the man twice as old. In meetings and out of them I have learned from the young. Many have told me that, though I am old, I have remained young. I hope they did not suggest mere ignorance. But if I had not learned in societies, county and others, mostly from men far inferior in years, I should have accumulated an unenviable pile of ignorance.—Abraham Jacobi.

*THE PRESENT DAY TENDENCY IN  
THE TREATMENT OF TU-  
BERCULOSIS.\**

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During a trip abroad, made last year for the purpose, the writer visited a large number of the leading sanatoria for tuberculosis, particularly those in Germany, England and Switzerland, and those especially erected for the working class of people. During the present year a large number of newer sanatoria for tuberculosis, erected in this country, mainly in the eastern section, were visited.

I was rather amazed at the extent to which the propaganda for home treatment and to which the erection of municipal and state sanatoria for this class of patients had reached; especially at the large number and extensive size of the sanatoria which were erected for the incipient class of tuberculous patients. The last official report of the National Association for the Study and Prevention of Tuberculosis states that there are at the present time five hundred and seventy-seven sanatoria and hospitals in the United States, most of them for incipient or early forms of tuberculosis.

These sanatoria are, of course, only a part of the means which have been devised for the purpose of combating the spread of tuberculosis and its treatment. There are the dispensaries, the day and night camps, the class method of treatment, and other various forms of home treatment which have been so strongly advocated by any number of men, some of considerable prominence engaged in this work. In fact, the advocacy of home treatment, on the one hand, and the disparagement and belittling of climatic

treatment on the other, have been so strongly persisted in that undoubtedly a great deal of harm has been done, to the detriment of many sufferers from tuberculosis.

Let me quote a few of the statements repeatedly to be found in the writings of some of the advocates of home treatment. Dr. Lawrence Flick is well known as one of the strongest exponents of home treatment for tuberculosis. He believes that "climate has no specific value in the treatment of tuberculosis. Change of scene and environment may be of use in cases in which the mental attitude is bad, but only in so far as it corrects the mental attitude."<sup>1</sup> He affirms that the feasibility and practicability of treating tuberculosis successfully, anywhere and in any climate, has been proven; that this disease could be as successfully treated in the slums of a city as in a mountain resort.<sup>2</sup> Dr. Knopf, while admitting the advantages of climato-therapy in suitable cases, makes the statement that "the number of phthisiotherapeutists who consider even the best and most suitable climate of secondary importance, and the hygienic and dietetic treatment preferable in a closed establishment, or under constant medical supervision in congenial surroundings, the all-important factor, is constantly increasing." He also states that from personal observation of quite a number of cases, cures of pulmonary tuberculosis in home climates are more lasting than in more congenial climates away from home, and mentions the names of a number of well-known specialists in tuberculosis as having had the same experience.<sup>3</sup> He admits, however, that it takes longer in an unfavorable climate than in a favorable one, but is "firmly convinced that the cures thus obtained compare very favorably with those obtained in milder climates."<sup>4</sup> Dr. Edward A. Otis, referring to Dettweiler's work at Falkenstein Sanatorium, says that it was

\* Read at the meeting of the State Medical Society, Glenwood Springs, October 9, 1913.

Dettweiler who first enunciated and proved the fact that tuberculosis could be cured in any climate, and he strongly approves the theory.<sup>5</sup> Mr. Frank Wing, superintendent of the Chicago Anti-Tuberculosis Society, in an article, states that it has been demonstrated at the sanatorium at Naperville, Ill., that tuberculosis could be successfully treated in the Chicago climate.<sup>6</sup>

The advocacy of home treatment by such prominent men, and the constant argument and insistence in its favor, has resulted in a large following, who have adopted these views as their own and have become especially active in connection with anti-tuberculosis societies. Now what have been the actual results of the carrying out of the views of these advocates of home treatment?

There seems to be a great divergence of opinion as to results obtained in the various methods of treatment in unfavorable climates. Some physicians, in advocating class treatment, declare they have obtained better results by this method in cases than if they were sent to a sanatorium; some laud the dispensary method of treatment, while others say that after years of trial of this treatment they have obtained no results at all. Dr. H. R. M. Landis makes the point that "one advantage of the class method is that cases you arrest in their home surroundings are pretty apt to stay well."<sup>7</sup> Dr. J. A. Miller hesitates in being too optimistic about the permanency of the results to be obtained by class treatment, for he says that although they have discharged nearly 60 per cent of their cases apparently cured or arrested, some are beginning to die or relapse.<sup>7</sup> Dr. Gordon Wilson's views on the dispensary method of treatment are evidently not very favorable, for he says: "Some years ago I started a dispensary, and after years of hard work came to the conclusion that it was absolutely useless

from the standpoint of the cure or arrest in the individual patient."<sup>7</sup>

We have also some contradictory reports very recently from the day and night camps. Dr. Holbrook Curtis says "there would be no need of the enormous hospitals so tardily in process of construction"<sup>8</sup> if more night and day camps were employed, while other physicians have given up the method as not producing satisfactory results.

There has been, undoubtedly, considerable unwise agitation on the part of anti-tuberculosis societies in their propaganda. This applies to physicians and societies both in favorable and unfavorable climates. In favorable climates we have often unwise agitation of phthisiophobia, and also of "scare warnings" not to send poor people or the indigent who are striving for health in a more congenial climate, or the seeker after a new home or occupation who had probably had his disease arrested elsewhere. I have learned in numerous interviews with social workers, physicians, etc., in the East, that, as a result of this unwise agitation, they have become imbued with this idea that communities like Denver, Los Angeles, etc., do not welcome the seeker after health. They have, through unwise agitation of thoughtless people, obtained an entire misconception of their duties to the tubercular afflicted. A reaction against this unwise agitation can be observed in the final report of the California Commission, submitted December 24, 1912, in which we note the change of sentiment from the advice to pass too drastic a legislation, restricting the admission of all indigent consumptives, to a suggestion that the indigent should not leave his home and friends without the supervision of the state, that "some system of inter-state reciprocity should be developed" and that future study will develop ways and means of dealing with this problem.



In unfavorable climates we have the other extreme of societies and their component members advising, in and out of season, that no one should leave home—that people can get well just as soon there. They even go to the extreme of advising not leaving the individual domicile.

Unwise are they also in advocating and endorsing the erection of sanatoria and hospitals probably not needed in their location.<sup>9</sup>

“Two striking examples of a popular misconception that the mere establishment of a hospital or sanatorium for tuberculosis patients will at once fill the institution have recently been afforded. In February of this year the Montana State Sanatorium located near Warm Springs, was opened with a capacity of thirty-two beds. The institution is well located and has all of the equipment needed, but the failure of the state authorities to realize that something more than a building or group of buildings was necessary has resulted in a dearth of patients. On April 9 there was only one patient at the sanatorium. The people of Montana and particularly the consumptive population, need education before they will go to this or any similar institution.

“In Ohio, a district hospital for consumptives for five large counties was opened at Lima in April, 1911, with a capacity of thirty-two beds. According to the recent annual report of the superintendent for the year ending March 31st, the average number of patients treated was only eighteen, and on that date there were fourteen patients at the sanatorium, and this too although there are manifestly several times that number of patients in the district. The reason for the apparent failure of this institution also lies in the lack of sufficient education in the counties for which it was erected, and in the failure of the authorities to realize that when the hospital had once been opened,

their real work of filling it had only just been begun.

“In these days, when institutional provision for consumptives is so much needed everywhere, it is hoped that the local tuberculosis enthusiasts will gain a truer conception of their real work than is indicated by these two examples.”

At Beelitz, near Berlin, in Germany, there is a sanatorium for the working class of people, erected under the Workmen's Insurance Act, which contains beds for nine hundred incipient tuberculous cases. This is a very elaborate institution, built at a great expense, and contains much in the way of costly equipment that is really practically useless. There is also a heavy cost of maintenance. The King Edward Sanatorium in England is one of the most costly and extravagantly built sanatoria of its kind. I was informed that it was compelled to lower its charges to a great extent before it could obtain applications to enter its doors.

In New York city, on Staten Island, there is just nearing completion a sanatorium for one thousand incipient cases, at a cost of three and one-half millions, and at probably a final expense of five millions, built in the most expensive style with no regard for economy. There is now being built in Chicago, a hospital also to take care of incipient cases, at a cost of upward of one million dollars, and at probably a still greater expense. Other institutions are being erected in a number of states, with branches in various counties. Would it not have been far better if these expenditures had been made in behalf of advanced cases of tuberculosis? This fact has been recognized by phthisiotherapeutists in these states. Dr. Barnes, speaking about “Curing Tuberculosis as an Investment,” says: “Until Rhode Island has a state hospital and more municipal hospitals for advanced cases of tuberculosis we shall continue to save at the

spigot and spend at the bunghole.<sup>10</sup>" Elizabeth Crowell, in her article, "Getting Together for Results," says: "One of the most serious obstacles to efficient cooperation will be found in divergent policies. Witness the Pennsylvania situation where the machinery of the state, backed by a two-million-dollar annual appropriation, is devoting its resources to the care of the early-stage cases by wholesale methods in a few central institutions while practically every other agency, including the private physician, is clamoring for adequate local hospital facilities for the care of third-stage cases."<sup>11</sup> Erection of these magnificent institutions, from an architectural point of view, and the extraordinary expenditures therefor, should certainly have been deferred until advanced cases had been taken care of, and until there had been made an unbiased investigation, and a definite determination of the ultimate results of cures from the pioneer sanatoria for incipient tuberculosis in these very unfavorable climates, for it is well known that reported cures from sanatoria, even in favorable climates, often relapse and cause the value of the work to be questioned. There is also a question as to the actual necessity of placing many of these incipient cases in sanatoria at all.

In our current literature we find statements as to the utter failure of sanatorium treatment, in the last few years, to eradicate tuberculosis. Is the sanatorium worth while? is often asked. There are also criticisms as to the immediate and ultimate results of sanatorium treatment. With these doubts still existing, it seems to me it would have been far better to have waited before making these enormous expenditures. There have also been in recent literature, repeatedly, expressions bearing upon this point. For instance, Dr. Priestley says: "It is a fact beyond question that at the present time,

with all the assistance rendered by voluntary agencies, a very large number of working-class patients do relapse after return from a sanatorium to their former homes and occupations."<sup>12</sup> Dr. Lister says: "I have never had any illusions as to the sanatorium being more than a means of arresting disease, a training school in health and an object lesson to the community."<sup>13</sup>

H. Grau, in his article on "Sanatorium Treatment of Pulmonary Tuberculosis," confesses that the restoration of the wage-earning capacity in the insured tuberculous wage-earners given a course at a sanatorium has not come up to the expectations when the sanatorium system was established fifteen or eighteen years ago by the government-aided, sickness insurance companies. . . . The present trend is to restrict the sanatorium course exclusively to patients with active tuberculosis promising permanent restoration of the earning capacity. He also says "that of the 9,296 tuberculous insured sent to the sanatoriums for treatment during 1910, from 5 to 10 per cent proved not to have tuberculosis. He emphasizes that the conditions into which the wage-earner returns on completion of his course, the poor food, the exposure to dust, the physical exertion, etc., are a tremendous strain on the healed lesions, so that estimation of the effect of the sanatorium treatment six years before is often a difficult matter."<sup>14</sup>

Fuchs-Volfring discusses in his article, "Municipal Measures for the Campaign Against Tuberculosis," quoted in the *Journal of the A. M. A.*, the advantages of specific treatment of tuberculosis, as compared with the usual sanatorium treatment, which he declares has given in Germany but meagre results. The public sanatoriums as run at present in Germany, that is admitting only the early, mild, curable cases, he regards as an anachronism

and absurdity, but nobody there is bold enough to express such a view after the hundreds of thousands that have been spent on the sanatoriums. All the patients could have been given specific treatment in dispensaries without stopping their occupations, and a far larger proportion of patients and the seven million marks could have been thus saved.<sup>15</sup> Dr. Knopf says: "We are spending approximately \$2,000,000 a year for the care of the tuberculous alone in the sanatoria, hospitals and dispensaries. A goodly number are discharged from the sanatoria as cured or arrested cases, but a very large percentage of these turn up again in some of our dispensaries after a few months with *new* typical lesions."<sup>14</sup> Dr. Baldwin, in his President's address, before the American Climatological Association, says: "But signs are not wanting that many of these partially arrested sanatorium patients are seeking other climates and occupations in health resorts. Many are being advised to try other places considered salubrious, because their condition has become stationary and further improvement is hoped for by change."<sup>16</sup>

It has long been recognized that there was a difficulty in comparing reports of various sanatoria. Various equations enter into such a comparison; namely, the personality of the medical director or examiner and statistician, personality of the patient, the great divergence in the class of people, such as different races, intelligence, financial circumstances, environment which surrounds the discharged cured case, after-life and habits of the cured individual and many other details that would have to be considered in making a just and fair comparison of results of institutions, located in favorable and unfavorable climates. Dr. Lawrason Brown says: "The results of sanatorium treatment can be divided into two classes: (1) the immediate results, which I think

are very much less important than the ultimate results; (2) the ultimate results. It would be unfair to compare the ultimate results of those who remain in health resorts or return to good hygienic conditions with those who have to return home to unhygienic surroundings. Consequently, ultimate results from some sanatoria cannot be accurately compared."<sup>17</sup> Dr. Lister, in his article in the *Lancet* says: "I have no delusions as to the statistics of sanatorium results. We have, as has been pointed out, no strictly comparable figures of the results of sanatorium treatment and non-sanatorium treatment. . . . But the individual resistance of the patient—his relative immunity is an unknown factor, and so statistical experts riddle the results of sanatorium treatment with criticism, while unable to tell what better to do. . . . But I have always pointed out very clearly that the sanatorium has great limitations." Dr. Lister lays great stress on the resistance power of the consumptive as a factor in the permanency of the cure.<sup>18</sup>

The report of the New York State hospital for treatment of incipient pulmonary tuberculosis, at Ray Brook, for the year 1912, gives a good illustration of the futility of comparison of results of various sanatoria for the treatment of tuberculosis. Here is a sanatorium that reports 107, or 64.84 per cent of apparent recoveries and 38, or 23.03 per cent of arrested cases during the year, out of a total of 165 incipient cases, only 7 discharged as unimproved and 1 death; 143 of moderately advanced cases, of which 53.10 per cent were discharged as either recovered or arrested. This is certainly a remarkable showing, even in the health resort which has so many points in its favor as that of the Adirondacks, in which district this sanatorium is located. But let us read from this report what character of case is classed as an incipient case. The defini-



tion of incipient, as given here, is "Slight initial lesion in the form of infiltration limited to the apex or small part of one lobe. No tuberculous complications, slight or no constitutional symptoms (particularly including gastric or intestinal disturbance, or rapid loss of weight. Slight or no elevation of temperature or acceleration of pulse at any time during the twenty-four hours especially after rest. Tubercle bacilli may be present or absent." The definition of a moderately advanced case is: "No marked impairment of function, either local or constitutional. Localized consolidation, moderate in extent, with little or no evidence of destruction of tissue. No disseminated fibroid deposits. No serious complications." Under the heading of "Cases Not Accepted," this statement heads the list: "No bed-ridden patients," and following it, conditions or exceptions which practically exclude all classes of tuberculous patients which come to most sanatoria, at least in Colorado. And yet this class of incipient patients has been kept in this sanatorium on an average of nearly eight months, and at an expense of \$10.98 per week, not including the cost of new equipment.

I cannot recall another sanatorium for incipient tuberculosis that can give a record similar to that of Ray Brook which I have just quoted.

Dr. J. W. Pettit, speaking about "Early Diagnosis," in his article on the "Mistakes and Misconceptions With Regard to the Modern Treatment of Tuberculosis," says: "The opinion prevails that those admitted to sanatoria if not incipient, at least come within the easily curable class. This is far from the truth, as shown by the fact that in institutions in this country there is an average of only 10 per cent incipient, of which 90 per cent are curable; 60 per cent advanced, of which 50 per cent or more may be cured, and 30

per cent far advanced, of which only 2, or 3 per cent, are curable. These are the conditions under which the sanatoria are working and will account in part for the many failures which must be charged up to them."<sup>19</sup>

An entirely different story from that outlined in the annual report of the sanatorium at Ray Brook.

Another point which is frequently overlooked in the compiling of statistics is whether the incipient cases are open or closed. There is a great difference in the prognosis of these cases, and the excellent statistics presented by many of the German sanatoriums, as well as in this country, are acknowledged to be due to the fact that of their incipient cases a large percentage are closed cases. I was informed on one occasion by Dr. Baldwin, of Saranac Lake, that 40 per cent of the patients at their sanatorium never showed tubercle bacilli in their sputum. Yet, notwithstanding, the large percentage of favorable cases admitted to these unfavorably located sanatoria, it is becoming an increasingly frequent occurrence for sanatoria in health resorts and favorable climates to receive applications from patients which have been discharged from these institutions as cured. In the last two years at the National Jewish Hospital for Consumptives many patients admitted had formerly been patients in institutions in the East. In 1911, out of 219 patients admitted, 38 had been inmates of eastern institutions; in 1912, out of 202 cases admitted, 52 had formerly been inmates in institutions in the East. Let me give, as an example, the histories of two such cases, of which there are many in our files.

#### DATA.

Mr. J. F.—Had been sick about five years. When first became sick entered hospital for incipient consumptives in his home state. After six months' residence

discharged and pronounced cured. Went back to work. After short interval became sick again. Later entered hospital for advanced cases in same state. Remained there only a short time because he did not do well. Came to Colorado in April of this year. Upon examination, case found to be of advanced Turban—3 type. Has remained in Colorado ever since, improving daily and is much better. Funds had to be raised by a society to which he belongs to send him out to Colorado and to support him here all this time.

Mr. J. H.—Became sick about three years ago, sent to eastern institution, where remained short time, not doing well. Went to the Adirondacks for a year, not doing very well during this time. Returned home in July, 1912, where he remained until July, 1913, when he came to Colorado. Examination proved both lungs involved to considerable extent with active tuberculosis, but under this change of climatic conditions he began to improve and has been making good strides towards an arrest of his disease.

Some nineteen millions have been spent in the last year in the United States in the campaign against tuberculosis and for its treatment. Millions are being spent for the erection of sanatoria for incipient cases and for their maintenance. Here are two instances just cited upon whom it was necessary to spend additional money to send them, as a last resort, to suitable climates. Would it not have been far better and far cheaper to have sent these cases, in their incipency, to favorable climates, where the chances for a permanent arrest of the disease would have been infinitely greater?

The slogan, if I so may term it, that tuberculosis can be cured in any climate, no matter how unfavorable, has, of course, been taken up by many physicians and laymen, and as a result of this the pro-

fession has largely, at the present time, fallen into as great an error as before, when climatic treatment was considered to be the only thing, sending away all their cases, regardless of stage and suitability, and are now keeping at home many cases which should be sent away. We frequently find a note of warning against this tendency. Dr. Wm. C. Rives, in discussing Dr. S. A. Fisk's article, "A Search for a Suitable Climate," says: "While we may, at one time, have overestimated the value of climate, the pendulum is now swinging too far the other way." Dr. De Laneey Rochester argues that "we ought not to try to substitute the home treatment of tuberculosis for the climatic treatment when we find such excellent results from the latter treatment." Dr. Vincent Y. Bowditch says: "The fact remains that however much we have advanced in successful methods of home treatment, for a large number of cases I still believe that under certain conditions the more radical change is much the wiser method."<sup>20</sup> Dr. J. W. Pettit, speaking about the "Mistakes and Misconceptions With Regard to the Modern Treatment of Tuberculosis," says, "This conviction had become so strongly rooted that it seemed a hopeless task to change opinion on this subject. The campaign of education which was then inaugurated has resulted in such a change of public and professional sentiment that now the belief is general not only that tuberculosis is curable, but also that climate is not an important factor. This somewhat sudden and very radical change in sentiment has resulted in the pendulum swinging too far . . . The public generally, and, unfortunately, many of my own profession, have come to believe that tuberculosis is very easily cured and that by very indifferent methods. . . . Marked apathy and hopeless indifference has changed to extraordinary zeal, and as is often the case, those

who have been among the first to advocate certain measures, which we know to be of value, find ourselves obliged to take a rather conservative position lest the extravagant claims made by our converts shall result in a reaction of sentiment and a consequent unreasonable prejudice against methods of treatment, which, when rationally used, are of infinite value to thousands of sufferers. In this somewhat conservative position I find myself at present, and while not wishing to be regarded as abating my enthusiasm for sanatorium treatment, I want to sound a note of warning against the extravagant claims which are being made by many who have only superficially studied the subject. . . . Fads and fancies have gathered about the so-called open-air treatment, and impossible claims have been made by inexperienced enthusiasts as to the almost miraculous efficacy accruing from sanatorium residence."<sup>19</sup>

The tendency which has existed for some time to question the value of sanatoria and as to their failure, undoubtedly has been due to unjustified exaggerations of results and too-early reportings of cures in many instances, of cases which promptly relapsed upon return to home surroundings, to the admitting of many unsuitable cases and the retention at home of cases which should have been promptly sent to suitable climates. The first condition must be that the sanatorium treatment is absolutely necessary, and the second that there exists reasonable hope of its having a successful issue.

To the sanitarian or physician who is accustomed to visit the various sanatoria for tuberculosis in unfavorable climates, comes the knowledge of how many difficulties and hardships the patient must endure who takes this cure and the outdoor treatment that is customary at this time. Disagreeable weather conditions, requiring heavy wrappings and coverings, and

sometimes sleeping bags, strikingly present the disadvantages of home treatment. There is even now a reaction against this present-day tendency to carry on outdoor treatment, under all conditions, and a protest has been made against carrying the fresh-air treatment to extremes in winter in unfavorable climates. Dr. Hugh M. Kinghorn, speaking about "The Employment of Cold in the Treatment of Pulmonary Tuberculosis," says: "Change of climate often of itself rapidly cures fever, and patients have often been saved by a change of environment after having been given up. . . . Provided the fever is recent, I think that patients should be sent away at the earliest possible moment, as their chances of living are thereby enormously increased. Nothnagel considers change of climate to be often the only cure of fever, and Brehmer and others have similarly expressed themselves. The annoyance and fatigue of the trip are of secondary importance. . . . Not only should we send our patient to the health resort when the hygienic conditions at home are unsuitable for taking the cold-air treatment, but even if the home conditions are suitable we should still not undervalue the favorable influence which change of climate exercises upon the appetite and nutrition."<sup>21</sup> Dr. C. W. Chapin says that "changes in climate are important, increasing the prognostic outlook by about 10 per cent."<sup>22</sup> Dr. Baldwin, in his article, "Progress and Changes in the Treatment of Tuberculosis During the Last Twenty Years," refers to the results of propaganda for home treatment. State and private sanatoria, having successfully justified their location in situations relatively inferior as to climate conditions, "the climatic nihilist has joined hands with the medication nihilist in decrying the real value of climatic change. . . . Having discovered the elements of paramount importance in fresh air, food and rest, cer-



tain sanguine but not otherwise individuals have gone to extremes in their enthusiasm, so that today we find the home treatment vaunted beyond reason. . . . Most noticeable in some quarters is the preachment against the usefulness of climatic treatment *per se*. I think this is a loss, but destined to be only a temporary one. Disappointment and reaction must follow, and those of us who realize what deep-seated constitutional weaknesses must be combatted in many cases of tuberculosis know that only by radical and permanent change of climate and environment can results be accomplished."<sup>23</sup>

In his book entitled "Medical Climatology," S. Edwin Solly tells us that "Climatology (in which the profession as a whole is little learned) is not the pure empiricism that many think, but is a science founded on natural laws and strengthened by rational experience." This calls our attention to the fact that we must not overlook the chief factors in the cure of tuberculosis; sunlight, purity of air, freedom from moisture or dry air, and that we can find most or all of these only in certain favorable climates. Dr. Bowditch says: "It is well for us not to forget the teachings of those whose powers of observation were keen before the days of the discoveries of the microscope. The danger of residence on a damp soil and the advantage of a change from such unhealthy conditions were subjects which were deeply instilled into my mind during my earliest medical instruction. In the years which have elapsed, and with the lessened emphasis now laid upon this subject, I have seen not the least reason to doubt the truth of these teachings, and have kept them constantly in mind in dealing with consumptive patients."<sup>24</sup>

I need not refer to the many physicians in early medical history, such as Celsus, Pliny, Galen, Sydenham and many others, during the intervening centuries, who so

wisely and forcibly advocated long journeys, either by sea, riding or walking, to high altitudes, and change of climate as a cure for tuberculosis. We should not forget to profit by the experiences which led them to promulgate this doctrine.

The best thought of sanatoria abroad are situated in the favorable climatic regions in Switzerland. In Davos alone there are eighteen different sanatoria, catering to all nationalities and readily meeting the financial ability of those who seek its beneficial advantages. Davos has grown to its present status entirely because of its climatic advantages, and the inhabitants welcome the health-seeker and use every effort to make his stay pleasant—an attitude which it would be wise for similar communities in this state to imitate.

A lunger, speaking about the cost of living in the Southwest says: "The air is a marvelous compensation; its benefits have never been sufficiently stated." In favorable climates, patients who have had a tuberculous disease arrested, can live without much effort under the same conditions which surrounded them in the sanatoria from which they may have been discharged as cured, while if they remain in an unfavorable climate, and most likely returning to their former unsanitary and disease-breeding environment, they will quickly relapse, and count for naught the time spent in the sanatorium.

The neglect to make use of every means that we have for the successful cure of tuberculosis cannot be too strongly condemned. Climato-therapy is a very important adjunct in the treatment of this disease, and every patient that can possibly obtain its advantages should be so advised. It is, however, necessary that the physician should be thoroughly posted in various climates, in the subject of climato-therapy, and that sending patients away from home should not be done in a

haphazard way, not as a routine. Each case, of course, should be studied carefully, and the particular climate indicated, advised.

It would be impossible with the time at my disposal to go into the subject of climato-therapy, nor is it intended that this paper should include that part of the treatment of tuberculosis. It is our duty as the professional adviser of a patient to point out to him where he can get the best advantages for a speedy cure of his disease, considering not only the immediate cure of the patient or arrest of his disease, by perhaps placing him in proper hygienic surroundings and furnishing him with proper and sufficient nutrition, but also where he can reside in the future and be least subject to a relapse. Proper propaganda would be that they should come, but sufficient provision should be made for their care by their friends by those interested, or by the state, while they are making the fight to regain their health and to establish new homes.

No one realizes more than I do the difficulties which surround the rehabilitating of discharged cured consumptives, and of the many sad, futile and depressing attempts made by these people to establish themselves in new homes and occupations in favorable climates. If some of the millions which have been spent in unfavorable climates for various purposes along anti-tuberculosis lines, had been used in the establishing, in favorable climates, of industrial colonies, I am sure the ultimate cures and economic results would have been far greater than from any other method.

<sup>1</sup>Interstate Medical Journal, 1911, XVIII., p. 203.

<sup>2</sup>From speech made at the opening of new building at Henry Phipps Institute.

<sup>3</sup>Prophylaxis and Treatment of Pulmonary Tuberculosis, p. 200.

<sup>4</sup>Discussion: New York State Journal of Medicine, 1913, XIII., p. 156.

<sup>5</sup>Boston Medical and Surgical Journal, 1912,

CLXVII., p. 145.

<sup>6</sup>Journal of Outdoor Life, August, 1913.

<sup>7</sup>Discussion: Trans. Amer. Clima. Assn., 1911, XXVII., pp. 111, 113, 116.

<sup>8</sup>New York State Journal of Medicine, 1912, XII., p. 386.

<sup>9</sup>Journal of Outdoor Life, June, 1913.

<sup>10</sup>Journal of Outdoor Life, May, 1913.

<sup>11</sup>Journal of Outdoor Life, August, 1913.

<sup>12</sup>British Journal of Tuberculosis, April, 1913.

<sup>13</sup>British Journal of Tuberculosis, July, 1913.

<sup>14</sup>Journal of the A. M. A., 1913, LXI., p. 157 (abstract).

<sup>15</sup>Journal of the A. M. A., 1913, LXI., p. 817

<sup>16</sup>Trans. Amer. Clima. Assn., 1910, XXVI., p. 7.

<sup>17</sup>Discussion: Trans. Amer. Clima. Assn., 1908, XXIV., p. 34.

<sup>18</sup>Lancet, 1912, I., p. 667.

<sup>19</sup>Illinois Medical Journal, 1910, XVII., pp. 1-10.

<sup>20</sup>Discussion: Trans. Amer. Clima. Assn., 1907, XXIII., pp. 51, 52.

<sup>21</sup>Trans. Amer. Clima. Assn., 1910, XXVI., p. 81.

<sup>22</sup>Illinois Medical Journal, 1910, XVII., p. 41.

<sup>23</sup>Trans. Amer. Clima. Assn., 1909, XXV., pp. 87, 90.

<sup>24</sup>Trans. Amer. Clima. Assn., 1911, XXVII., p. 130.

#### DISCUSSION.

**Charles D. Spivak, Denver:** I was very much impressed and gratified by the emphasis laid by the writer on the necessity of providing sanatoria for the advanced cases. This sentiment has been growing only during the last few years. As I am connected with the Jewish Consumptives' Relief Society, I take some pride in the fact that this society was the first in Colorado to recognize the fact that it is the advanced cases that have to be taken care of first and foremost, and that in the majority of cases the incipient cases can take care of themselves, and do not need as much sanatorium treatment as the advanced cases.

The National Jewish Hospital for Consumptives has been in existence for thirteen years, and the Jewish Consumptives' Relief Society has been in existence for ten years. Both admit very poor patients free of charge. After they have been in the sanatoria for several months they are discharged, and they remain in Colorado, because they are advised by their superintendents that it is best for them to remain where they have been cured, and that disastrous results occur in the majority of such cases as go back to their old environment. During these thirteen years there have been discharged from the National about 2,500 cases and from the Jewish Consumptives' Relief Society 2,000 cases, and the majority of those that have survived remain in Colorado. We know that tuberculosis cases are liable to relapses, and therefore at some future date will become advanced cases. We have them continuously in the Sanatorium of the Jewish Consumptives' Relief Society; in fact we have had cases admitted for the fourth and fifth and sixth times. They go out and they work

amidst unhygienic surroundings; they must work, at anything they can get, and of course they have relapses and come back to us absolutely disabled. What is the result? It is clear that these advanced cases will eventually need further treatment. I am very happy, indeed, that Dr. Collins, who is the superintendent of an institution for incipient cases, after having had his experience for thirteen years, has also come to the conclusion that it is the advanced cases that need sanatoria treatment, first and foremost.

**Herman Schwatt, Edgewater:** I have enjoyed Dr. Collins' paper very much. I want to say a few words in regard to the comparative value of climatic and home treatment, or treatment of tuberculosis in supposedly unfavorable climates.

We, in Colorado, are inclined to be a little over-enthusiastic about climatic treatment, but I do not believe there are many of us who can speak authoritatively upon this subject. I think that the only man who can do so would be one who has had a great deal of experience in the treatment of tuberculosis in eastern climates as well as out here.

Authorities are about equally divided between the value of climatic and local treatment. There are certain cases of tuberculosis which should, under no conditions, be sent to high altitudes and at a great distance from home. I think that most of us are agreed on this point.

The decision of the value of climatic versus local treatment based on a study of reports is, in my opinion, valueless. I have, within the past two years, studied very thoroughly the medical reports of some forty institutions, and my conclusion is that the statistics are very largely influenced by the writers. I do not think that they are exact enough for comparative studies. The classification of the disease, in these reports, varies widely. Some of the institutions use the classification of the National Association, others the modified one of the American Sanatorium Association, and some have a classification to be found nowhere else, so that it is practically impossible to tell what they mean.

Some of the men in the West who have made comparative studies claim a good deal for climatic treatment. I believe it has been stated that the results are better with every thousand feet of elevation, but, as I have said before, I do not think the data sufficiently exact for definite conclusions. I believe that what is needed and what is absolutely essential for the decision of this question in the future is a more definite classification of tuberculosis and of results of treatment than what we have at the present time. An incipient case, according to the National classification, might easily be called non-tuberculosis, and some cases moderately and far advanced are sent out by physicians with the diagnosis of incipient tuberculosis.

After all is said, the question of local and climatic treatment is unimportant as compared to the necessity of early diagnosis and early treatment. No matter where the treatment is

applied, East or West, in charitable, state or private institutions, a very important consideration which influences results in every instance is the mental state of the patient, and particularly the freedom from worry about the family, which is all too frequently left behind in desperate circumstances. The modern tendency of the treatment of tuberculosis should be directed to early diagnosis and proper care by the community, not only of the patient, but of his family as well.

**O. M. Gilbert, Boulder:** I want to reiterate a statement which I made at the meeting of the National Association for the Prevention of Tuberculosis. In June, 1911, there was a very heated discussion regarding the advisability or inadvisability of climatic treatment of tuberculosis. I stated that, "while there is plenty of room for difference of opinion upon this point, there is one thing which it seems to me that we might all agree upon, and that is, if cases are to be sent away at all they are to be sent early. It is little short of a crime to send far advanced cases here to die among strangers, and, as is often the case, without money to obtain the bare necessities of life."

I also desire to endorse the attitude taken by the author concerning the care of advanced cases. Those who have followed the work reported in the *British Medical Journal* will recall that the most advanced studies which have been made in England have shown that the largest problem in controlling tuberculosis is the taking care of the advanced cases—cases which are scattering millions of tubercle bacilli daily.

Another thing: the preventive measures must be taken with the children more particularly than with adults. There is some difference of opinion as to whether the tuberculosis of later life is the original childhood infection, simply relighted or a new infection. Baldwin of Saranac Lake has recently called attention to the fact that it is very questionable as to the amount of infection that takes place in the adult life, and we must direct our attention more to prevention in childhood.

**G. A. Boyd, Colorado Springs:** I think the modern tendency in the treatment of tuberculosis is by that readjustment that comes between the sick and society as the result of a social consciousness of the fact that tuberculosis is a social disease, and that the efforts of the patient must have a response upon the part of the body politic for the best application of the known fact as regards our power to protect ourselves from this great source of destruction.

I think the report given will bear this out. We notice the tendency is constantly toward that provision which concentrates the energies, which makes the knowledge we now have more effective through the various types of sanatoria, the private institutions, the fraternal institutions, the racial institutions, the municipal institutions, the purely philanthropic institutions, with an occasional effort upon the part of the state to give this work help. So if we are to meet these problems in a purely scientific and business way, we must meet it as a body politic. We must meet it through our



## News Notes

municipal, state and national efforts, and when we have succeeded in making it possible, for the patient himself to have some place where he can go, and not feel that he has not the right to go unless he has sufficient funds individually to meet this expense, which is enormous when placed entirely upon him. He will then be more responsive, more eager in seeking this relief, because he will feel that he has that right. We must make him feel that he does have that right, and we must learn that we owe him that privilege, if for no other than the selfish purpose of our own protection.

So I am in hopes that the State Medical Association will take it to heart and will try to bring what power it has to bring our Legislature to a consciousness that the modern tendency in the treatment of tuberculosis is for the municipalities, the state and the nation to take an active interest and make these provisions.

**Moses Collins, Denver:** Of course it was impossible for me in this paper to touch upon everything. I want to refer to one or two statements which have been made. My suggestions with reference to sanatoria for patients with advanced tuberculosis were mainly directed to those places where they were most needed, that is, in their home cities, and that these unfavorable climatic localities should not begin their work with the incipient cases, but rather with the advanced case.

In our own climate of course we ought to receive cases that can be benefited, that come early so that they will not become advanced cases if possible. We do not want to invite advanced cases if we can avoid them unless there is some provision for taking care of them until they die.

In reference to sanatoria for incipient cases, the sanatoria really should be for the early class of cases that have some active form of the disease, that have a tendency to advancement but that can be benefited by a stay in a sanatorium, especially in a favorable climate.

The question as to whether an advanced case is more menacing to society than an incipient case is a very doubtful one in my mind. Those of you who have taken the trouble to examine the sputum of patients suffering from tuberculosis know it is a fact that the case of incipient or early tuberculosis, in whose lungs you can sometimes hardly find a physical lesion, will emit infinitely more tubercle bacilli than an advanced case, and we have seen lots of advanced cases that have little or no expectoration, and with very little tubercle bacilli in their sputum. The point is that we must protect the public from the patient who is showing active and progressive signs of the disease.

God will not ask from what college you are a graduate, what honorary degrees you have, what scientific discoveries you have made, what medals you have won. He will ask if you have tried to make your work, your profession, your world, better. He will ask if you have worked with your brother or against him. —Rock Sleyster.

Dr. Baker, president of the University of Colorado, has announced that the Carnegie foundation has promised soon to give to the medical department of the university an endowment of \$1,000,000.

Dr. John M. Foster, for many years a sufferer from gastric ulcer, was operated upon recently at Rochester, Minn. He is reported to have made a rapid and satisfactory recovery.

Dr. Charles F. Stough of Colorado Springs has gone to Switzerland to spend a few months at the clinic of Kocher.

Dr. Joseph A. Hatzfield of Pueblo died November 14. He had been practicing in Colorado since 1898.

Dr. Fred Weber and wife of Boulder, both graduates of the medical department of the University of Colorado, are rejoicing over the birth of a daughter.

After twenty-three years of service as head physician of the Woodmen of the World, Dr. T. A. Hughes has resigned. He has been succeeded by Dr. James Stenhouse. During this period Dr. Hughes has passed upon more than a quarter of a million insurance applications, having had 1,600 examiners under his supervision in the region extending from Nebraska to the Pacific coast. Much of the success of this great fraternal organization has been due to the careful scrutiny of applications by the head physician and the care used in appointing the local examiners.

Dr. J. Ed Ray, president of the Crowley County Medical Society, died in Pueblo, November 12, 1913, aged 77 years. He was born in Kentucky and graduated from the University of Pennsylvania in 1860. He located in Sugar City in 1900, where he continued in practice until his death.

Doctor Ray took an active part in public affairs and was an enthusiastic member of the County Medical Society. He will be missed in the home county and in Pueblo County, where he was widely known. Doctor Ray was a member of the Masonic fraternity and of the Elks.

Dr. F. E. Wallace of Pueblo has taken a suite of three rooms in the new First National Bank Building, now about completed in that city.

The City Commissioners of Pueblo have asked the County Medical Society to co-operate with them in establishing an efficient Health Department. They have stated that they will set aside \$3,500 this coming year for the purpose of installing and maintaining a laboratory. We can expect Pueblo in the next two years will have one of the most complete laboratory and efficient Health Departments to be found.

Dr. Nathaniel A. Thompson was married to Miss Isabel McKenzie, in Boulder, November 28. Dr. Thompson has been associated with Dr. C. B. Lyman for several years. His wife is a graduate of the University of Colorado and will, doubtless, contribute much to Dr.

Thompson's future, which already promises much success.

Dr. C. A. Ellis has been elected president of the Denver Rotary Club.

Dr. James C. Todd, secretary of the Boulder branch of the University Medical school, recently left for the East, where he will spend two weeks visiting various medical schools. He was accompanied by his mother, Mrs. J. H. Todd, who is returning to her home in Worchester, Ohio, after having spent several months in Boulder.

## Constituent Societies

### EL PASO COUNTY.

The regular meeting of the **El Paso County Medical Society** was held at Antlers Hotel, November 12, 1913. Attendance 37 members.

Clinical Cases: Specimen of ectopic pregnancy, shown by Dr. McClanahan, with its history report. Report of another unusual specimen of the same, by Dr. Boyd. Dr. Moses showed two cases of psoriasis. Dr. Geise showed a patient suffering from obstructive cough.

Papers: Cough, with phonographic demonstrations, by Dr. Magruder. Pitfalls in diagnosis of upper abdomen, by Dr. Wilson.

There was general discussion of the papers and clinical reports.

Drs. Mary Riggs Noble, John B. Crouch, Edward Moore and Frank T. Stephens were elected to membership.

Amendment 8, State Society By-Laws, Chap. 4, Sec. V., was read; also letter from S. Epstein, Commissioner of Insurance, was read, cautioning physicians to examine for unlicensed life insurance companies in Colorado.

Society adjourned, after which a lunch was served in the dining room.

J. H. BROWN, Secretary.

### WELD COUNTY.

The regular meeting of the **Weld County Medical Society** was held in the city hall Monday evening, November 3, 1913, with our worthy friend and president Dr. D. W. Reed in the forum. The doctor was in good fettle and had little trouble in maintaining order, notwithstanding the attempts of the members to be somewhat combative and facetious, in this respect setting an example which we trust will be a matter of emulation for future occupants of the chair. The minutes having been approved, communications of vast import were read from Secretary of State Black and from Drs. Strickler and Corwin. These being considered in due form, the report of the committee on local hospitals was read and discussed and finally approved. Dr. Pogue, who had the details of the report well in hand, made a spirited address in support of the contentions embodied in the report, which after considerable discussion by Drs. Knowles, Hughes, Woodcock, and lesser lights, was formally approved.

The first paper of the evening, by Dr. C. B. Dyde, consisted mainly of clinical reports of unusual conditions and symptoms encountered in typhoid cases the current season, closing with a report of two surgical cases in which the diagnosis was somewhat obscure. These were freely and fully discussed by Drs. Pogue, Thompson, Hughes and Weaver, who collectively elucidated many points in the report which otherwise would have been obscure. Dr. Mead introduced a novelty in the program by reading, and commenting on, the report of a case in the American Journal of Obstetrics which occurred in the seventeenth century and appertained to the difficulties encountered by eminent obstetricians of England, in discovering the truth of a report regarding a certain woman who was said to have given birth to numerous rabbits at sundry times and in divers places. The paper was fully discussed by Dr. Raymond of Windsor who went on record as having taken active part in many incidents equally curious, the nature of which he would not divulge in public. The meeting closed in good order.

J. W. FEHAN, Secretary.

### COLORADO OPHTHALMOLOGICAL SOCIETY.

The regular monthly meeting of the Society was held on October 18, 1913, in the offices of Dr. G. F. Libby, Metropolitan building, Denver. Attendance, 15.

Dr. Bane presented a woman whose left eye had been lacerated by a broken lens in accidentally striking her head against a chair. The wound extended across the whole cornea and into the sclera. There was no evidence of injury to the lens, and the eye had healed apparently without infection.

Dr. Sedwick presented a child of about nine years whose right eye was extremely staphylococcal and distended, probably as the result of an infection shortly after birth.

Dr. Jackson presented a case of unilateral optic atrophy with marked vascular retinal changes in the same eye, in a painter who also gave a distinct history of syphilis.

Dr. Libby showed a case of bilateral and symmetric opacity of the cornea, already brought before the Society, but now again presented on account of a distinct increase in the size of the opacities.

Dr. Jackson showed a colored sketch of a case of probable early sarcoma at the macula.

The regular monthly meeting of the **Colorado Ophthalmological Society** was held on November 22, 1913, in the offices of Dr. Edward Jackson, 318 Majestic building. Attendance 22.

Dr. W. F. Matson presented a child whose right lens was dislocated and whose left eye had been removed on account of melanotic sarcoma. The right eye had glaucomatous attacks.

Dr. Melville Black presented a case of serious uveitis, which had at first simulated glaucoma on account of an apparent increase of



tension, and was accompanied by exophthalmos.

Dr. H. R. Stilwill presented a woman of twenty-eight years who had become suddenly blind, each fundus presenting marked choked disks. Intranasal examination had shown the presence of polyps on both sides, vision, which had been reduced to shadows, and also the appearance of the fundus, had rapidly improved after removal of the polyps and operation on the ethmoid cells.

Dr. G. F. Libby presented a man whose sight had been destroyed by an explosion of dynamite caps. The lens of the left eye was clear, but the fundus could not be seen, and there was doubt as to the location of copper fragments in the two eyes.

Dr. G. F. Libby presented a woman of 35 years whose fundus had presented nothing abnormal in February last, but who now had pronounced neuroretinitis with marked lowering of vision, due to nephritis. The blood pressure was 220 m.m. of Hg.

Dr. Edward Jackson showed a young woman whose right eye had marked conical cornea secondary to glaucomatous ulcer, whose lens had been removed by needling on account of the high myopia present, and who now with the aphakic eye obtained her best vision with a minus 18 D lens.

Dr. Edward Jackson gave his impressions of Elliott's trephine operation for glaucoma, as demonstrated by the author during his recent visit to the United States.

WM. H. CRISP, Secretary.

#### LARIMER COUNTY.

There were present: Drs. Hoel, Taylor, Dale, Rew, McHugh, Halley, Kickland and Stuver. The election of officers was proceeded with and resulted as follows:

Dr. S. C. Halley, President; Dr. A. W. Rew, Vice President; Dr. E. Stuver, Secretary; Dr. T. C. Taylor, Treasurer; Dr. P. J. McHugh, Censor.

The censors now are: Dr. Dale, 1914; Dr. Kickland, 1915; Dr. McHugh, 1916. It was then moved, seconded and unanimously carried that a committee of three be appointed to be known as the "General Welfare" committee. Dr. McHugh (Chairman), Dr. Kickland and Dr. Stuver were named as this committee.

No other business appearing the meeting then adjourned.

E. STUVER, Secretary.

Fort Collins, Colorado, December 3rd, 1913.

## Book Reviews

**Essentials of Prescription Writing.** By Cary Eggleston, M. D., Instructor in Pharmacology, Cornell University Medical College, New York City. 32mo of 115 pages. W. B. Saunders Co., 1913. Cloth, \$1.00 net.

This handy volume will prove convenient and useful to the student who is beginning his ther-

apeutic studies. It will be of value to anyone, indeed, who has resolved to revive the languishing art of prescription writing.

**Massage: Manual Treatment, Remedial Movements, History, Mode of Application and Effects, Indications and Contra-Indications.** By Douglas Graham, M. D., Consultant and Instructor in Massage, Boston, Mass. With a chapter on Massage of the Eye, by Dr. A. Darier, Paris. Published by J. B. Lippincott Company, Philadelphia. Fourth edition, revised and enlarged, 574 pages, 75 illustrations.

This interesting volume is one which may well deserve the attention of the medical profession on account of its sane analysis, reasonable deductions and extensive review of the subject.

Dr. Graham has taken a great deal of care and space to present a right conception of massage as a system, and to correct that unfortunately wrong and prevalent idea that the regular medical practitioner should shun any form of massage or manipulation.

A careful reading of this book will at once be the means of impressing the physician with new ideas in the treatment of many diseased conditions and will enable him to follow the practice intelligently and scientifically.

HUDSTON.

**The Elements of Bacteriological Technique.**

By J. W. H. Eyre, M. D., Director of the Bacteriological Department of Guy's Hospital, London. Second edition, rewritten and enlarged. Octavo of 518 pages, with 219 illustrations. Philadelphia and London: W. B. Saunders Company, Philadelphia, 1913. Cloth, \$3 net.

It is gratifying to see that books on this important subject are becoming more numerous. Since the bacteriologist has proven himself indispensable in the successful practice of medicine this book will no doubt occupy an important place, as it is a concise, accurate, attractively compiled work in which the data is so arranged as to be quickly referred to. This volume is just the kind one would expect from Dr. Eyre, whose experience at Guy's Hospital places him in the front rank in this department of medicine. The chapter on Bacteriological Analysis, embracing in a condensed form the most approved method of analysis of water, milk, ice cream, cream, butter, unsound meats, oysters, sewage, air, soil, etc., alone justifies the book and increases its value as a reference work.

The illustrations of various apparatus which appear throughout the book are very good; the author evidently endeavoring, wherever possible, to assemble apparatus by the use of the ordinary glassware and other accessories usually found in the average laboratory.

The chapter on Experimental Inoculation of Animals will also be found very good reading by those interested in this work.

**Studies Concerning Glycosuria and Diabetes.**

By Frederick M. Allen, A. B., M. D. Octavo



of 1175 pages. W. M. Leonard, Boston. Cloth, \$9, express prepaid.

The author has here combined a critical review of the more important contributions to the voluminous literature of this subject with a report of his own extensive experimental work upon many of its phases. The resulting book, which he aptly characterizes as in spirit "an enlarged journal article," will appeal more directly to the laboratory worker and to the clinician specializing in this particular field than to the general practitioner. The latter will, however, find it a compendium of present-day knowledge and theories on the subject, and the occasional applications of experimental data to clinical and therapeutic problems will prove interesting. Especial consideration is given to the use of dextrose for parenteral feeding, and to the oatmeal treatment of diabetes; while Finklestein's theory of sugar intoxication comes up for comment and adverse criticism, and Kendall's work on intestinal fermentation is noted. The chapter on "Therapy" is shortened by the omission of well-known resources and deals rather with the more spectacular methods of ferment.therapy, opotherapy and operative treatment.

In other chapters the physiological and pathological changes produced in adult and young animals by the excessive administration of various sugars are exhaustively considered. The data gained from diabetes experimentally produced by operation or by drugs is critically reviewed and further work reported. Existing evidence of the relation of the liver to glycosuria is discussed and that organ concluded to be without influence. The relation of the pancreas receives a very extensive consideration. Not all of the author's conclusions will be readily accepted; his rejection of the current belief in the importance of polyglandular influences in the etiology of glycosuria, and his contention that pancreatic insufficiency is its "sole and invariable cause" may be cited as instances.

The arrangement of the book might be held insufficiently clear and definite to render it most suitable for reference but the complexity of the subject and its manifold ramifications make problems of arrangement unusually difficult. On the other hand the laborious work of collecting and rendering easily accessible such a mass of data is most praiseworthy, and its value is enhanced by the addition of an extensive and careful bibliography. The book should be useful to all those interested in the subject who lack access to a well-equipped medical library, or who, having such facility, lack the leisure necessary to unearth such information from the scattered original sources.

CHAS. N. MEADER.

**Massage; Its Principles and Technic.** By Max Bohm, M. D., of Berlin, Germany. Edited, with an Introduction by Charles F. Painter, M. D., Professor of Orthopedic Surgery at Tufts Medical School, Boston, Mass. Octavo, 91 pages, 97 illustrations. 1913: W. B. Saunders Co., Publishers, Philadelphia and London. Cloth, \$1.75 net.

The title conveys the contents of this volume. It is primarily a book of instruction on scientific massage, taking up in a concise form with abundant and clear illustrations the principles and methods of effleurage, friction, petrissage, vibration and tapotement of various parts of the body. As a working manual it is well worth the price, and will repay perusal by any physician who may desire to use massage as an accessory therapeutic agent. The illustrations are half-tone photographs and the reading matter is clear and concise.

HUDSTON.

**A Reference Handbook of Gynecology for Nurses.** By Catharine Macfarlane, M. D., Gynecologist to the Woman's Hospital of Philadelphia. Second edition, thoroughly revised. 32mo of 156 pages, with original line-drawings. Philadelphia and London: W. B. Saunders Co., 1913. Flexible leather, \$1.25 net.

This convenient and compact book is developed from some lectures delivered to the nurses of the Woman's Hospital of Philadelphia. It contains a judicious selection of those gynecologic facts that should fit into the course of a nurse's instruction. It is a valuable book for the nurse and contains helpful suggestions for anyone who teaches them the principles of diseases of women.

**Narcotic Drug Diseases and Allied Ailments.** Geo. E. Pettey, M. D., Memphis, Tenn. Octavo of 516 pages; illustrated. E. A. Davis Co., Publishers, Philadelphia. Price, \$5 net.

Dr. Pettey in this remarkable volume has given to the medical profession a book full of ripe thought and experience. The subject of narcotic diseases is taken up with a thoroughness which compels continued perusal, and is stated in simple yet comprehensive English which cannot be misunderstood.

The fundamental idea of the pathology and treatment of narcotic addiction and alcoholism is that of a disease per se, which is amenable to conscientious, scientific treatment. This is discussed so plainly and fully that the reader is impressed at once that the deductions are drawn only from years of practical experience, deep study and with a firm belief in the methods used.

There are many new departures from the recognized methods of treatment and the author has gone into detail on the actions and choice of various drugs thus used.

Repetitions are frequent but so skillfully handled as to leave a definite impression and memory of the fundamental ideas of the etiology, pathology and treatment of drug addiction.

This is a book for the general practitioner as well as the specialist, and the medical profession ought to feel grateful to Dr. Pettey for placing in our hands such a valuable addition to the problem of drug habits, and in a form which is undeniably strong and convincing.

HUDSTON.

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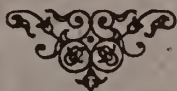
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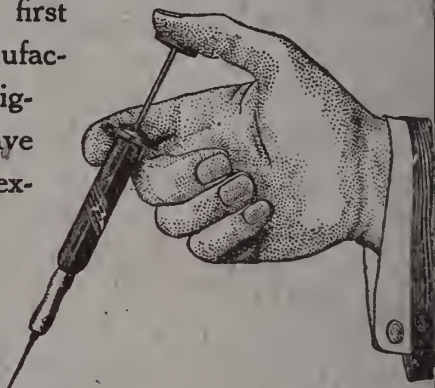
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